



Digitized by the Internet Archive
in 2022 with funding from
University of Toronto

<https://archive.org/details/31761114680572>

CA1

Z 1

-74M21

(1)

MACKENZIE VALLEY PIPELINE INQUIRY

Government
Publications

IN THE MATTER OF APPLICATIONS BY EACH OF
(a) CANADIAN ARCTIC GAS PIPELINE LIMITED FOR A
RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS
CROWN LANDS WITHIN THE YUKON TERRITORY AND
THE NORTHWEST TERRITORIES; AND
(b) FOOTHILLS PIPE LINES LTD. FOR A RIGHT-OF-WAY
THAT MIGHT BE GRANTED ACROSS CROWN LANDS
WITHIN THE NORTHWEST TERRITORIES,
FOR THE PURPOSE OF A PROPOSED MACKENZIE VALLEY PIPELINE

and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND
ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION,
OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE
PROPOSED PIPELINE

(Before the Honourable Mr. Justice Berger, Commissioner)

INUVIK, N.W.T.

February 11, 1976

PROCEEDINGS AT INQUIRY

Volume 122

CANADIAN ARCTIC
GAS STUDY LTD.

MAR-9 1976

LIBRARY

APPEARANCES:

Mr. Ian G. Scott, Q.C.,
Mr. Stephen T. Goudge,
Mr. Alick Ryder and
Mr. Ian Roland for Mackenzie Valley Pipeline
Inquiry;

Mr. Pierre Genest, Q.C.,
Mr. Jack Marshall, and
Mr. Darryl Carter for Canadian Arctic Gas
Pipeline Limited;
Mr. Reginald Gibbs, Q.C.,
Mr. Alan Hollingworth &
Mr. John W. Lutes, for Foothills Pipe Lines Ltd.;

Mr. Russell Anthony &
Pro. Alastair Lucas for Canadian Arctic Resources
Mr. Garth Evans Committee;

Mr. Glen W. Bell and
Mr. Gerry Sutton, for Northwest Territories
Indian Brotherhood, and
Metis Association of the
Northwest Territories;

Mr. John Bayly
or
Miss Leslie Lane for Inuit Tapirisat of Canada,
and The Committee for
Original Peoples Entitle-
ment;

Mr. Ron Veale and
Mr. Allen Lueck for The Council for the Yukon
Indians;

Mr. Carson H. Templeton, for Environment Protection
Board;

Mr. David Reesor for Northwest Territories
Association of Municipal-
ities;

Mr. Murray Sigler for Northwest Territories
Chamber of Commerce.

Mr. John Ballem, Q.C., for Producer Companys;

347
14835
Vol 122

CANADIAN ARCTIC
GAS STUDY LTD.
MAR-9 1976
LIBRARY

I N D E X

Page

WITNESSES FOR C.O.P.E.:

Jonathan R. PERCY	
Edward H. GRAINGER	
Thomas W. BARRY	
D.F. SERGEANT	
Thomas G. SMITH	
Jeffrey N. STEIN	
- In Chief	18488
Ian Grote STIRLING	
- In Chief	18522
- Cross-Examination by Mr. Hollingworth	18552
- Cross-Examination by Mr. Evans	18564
- Cross-Examination by Mr. Goudge	18646

EXHIBITS:

452 Consolidation filing & 3rd Amendment to Application to N.E.B. and DIAND	18488
453 Consolidation filing - drawings	18488
454 Qualifications & evidence of T.G. Smith	18518
455 Qualifications & evidence of I.G. Stirling	18689
456 1975 White Whale Study by Slaney & Co.Ltd.	18689

February 11, 1976

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. CARTER: Mr. Commissioner,
before Mr. Bayly proceeds with his witnesses this
morning, I'd like to file two documents and the first
is a consolidation filing and third amendment to the
Arctic Gas application and the second is the accompanying
drawings to that amendment

(CONSOLIDATION FILING AND THIRD AMENDMENT TO
APPLICATION TO N.E.B. AND D.I.A.N.D., MARKED
AS EXHIBIT NO. 452).

(CONSOLIDATION FILING - DRAWINGS, MARKED AS
EXHIBIT NO. 453)

MR. CARTER: Now, the amendment
covers the cross-delta routing as the prime route.
It also covers the new line to Shell's plant at Niglintgak,
the relocation of the Parsons Lake lateral, a relocation
of compressor stations CD-08 and the adoption of a
satellite base communication system. It also consolidates
all of the previous amendments to the application in
one volume. There's a letter to the minister as well
as the National Energy Board at the front of the volume
and it describes more fully what's contained therein,
and, in addition, all of the drawings have been consoli-
dated. So, I'd like to file both of these volumes with
Miss Hutchinson.

JONATHAN R. PERCY,
EDWARD H. GRAINGER,
THOMAS W. BARRY,
D. F. SERGEANT,
THOMAS G. SMITH,
JEFFREY N. STEIN, resumed:

DIRECT EXAMINATION BY MR. BAYLY:

MR. BAYLY: Dr. Sergeant, I

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 wonder if you could pick up where you left off yesterday
2 and continue with your evidence?

3 WITNESS SERGEANT: The question
4 that was asked by Mr. Justice Berger, I think, was "did
5 the whales extend into the region which the proposed
6 Arctic Gas pipeline would cross?". I think the answer
7 to this is best shown in figures four and five in my
8 testimony which is taken from the Slaney studies, and
9 these two figures, four and five, show data over four
10 years, which I think is the data available on this
11 question. They do show the figure five which has three
12 years information and figure four which has one year's
13 information. The latest shows that in two out of those
14 four years, the distribution of whales did include the
15 area which would be crossed by such pipeline.

16 I only have one other comment
17 on that, and that is on the whale's behavior. This is
18 taken from the work done by Dr. Paul Brodie for the
19 Slaney studies in 1972 and I have it as in the interim
20 report by the Slaney Company in 1972, part three by
21 Arctic components, page 33 under "whales". The information
22 reads,
23

24 "When stronger winds increase surface chop, the
25 herd will move seaward to ride a larger swell with
26 less surface chop or, as was observed in Mackenzie
27 Bay, move out nearer the ice, where the surface is
28 calmer."

29 That's the end of my quotation from that statement. I
30 would therefore suppose that there is considerable move-

Percy, Grainger, Barry
Sergeant, Smith, Stein
In Chief

1 ment back and forth by the whales in and out of the
2 very shallow water, depending on weather conditions, ice
3 conditions: perhaps also according to tide.

4 MP GOUDGE: One other point
5 on that matter sir, is you asked me to look at the
6 transcript of Mr. Webb's evidence given last time we
7 were here, and at page 17754 of the transcript, Mr. Webb
8 explains that he cannot give a number for the whales
9 seen far in Shallow Bay up as far as Reindeer Channel,
10 but that the overall number he referred to as being in
11 west Mackenzie Bay, off Shallow Bay was usually between
12 one or two thousand, but he couldn't put a figure on
13 the numbers that were seen far up the Channel.

14 A I believe our own counts
15 which, as shown in Table 1 of our testimony in the area
16 that I've called the western part of the delta, do
17 indicate the general numbers of whales are found in the
18 area which I defined as from Garry Island west, which
19 would include both what appear to be groups in that
20 whole western sector of the delta.

21 I believe I should, at this
22 point return to the written part of my testimony in
23 order to avoid confusion, and read it -- from page nine.
24 Returning to the question of effects of oil on white
25 whales, there is little knowledge of the effects of oil
26 on whales, since they are not easy to study experimentally.
27 In the Santa Barbara, California, oil spill in 1969;
28 strandings, which means whales on the beach, dead, for
29 one reason or another, strandings did not increase.
30

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 i.e. there was no unusual death rate of whales detected
2 and whales probably avoided the oil spill, publications
3 accorded.

4 The Santa Barbara episode
5 occurred in open water. In the Beaufort Sea, most oil
6 spills would occur when the amount of open water is
7 restricted. Whales might not have much freedom of
8 maneuver if they could not avoid the oil and could receive
9 oil fouling on the skin, in the respiratory tract and
10 in the digestive tract. Experimental work on ring seals
11 using a light crude, Norman Wells, has shown few ill
12 effects due to ingestion of the crude. I have a reference
13 here to a publication by Smith and Geraci and believe
14 there will be testimony on the subject.

15 Without knowledge of the nature
16 of oil that might leak into the sea, the thickness of
17 it on the water and without experimental studies on
18 whales, I am unable to draw any firm ideas of what
19 might happen to whales in the event of an oil spill. I
20 am sure that marine mammals would avoid oily surface
21 water if they could.

22 An upstream oil spill, and I'm
23 considering here what might be spilled upstream of the
24 whales in the Mackenzie, its channels or in the estuary.
25 If this was severe, it would, I think, displace seaward
26 a group of whales. However, a group of whales with
27 small calves would be unable or unready to move into the
28 cold oceanic water until the calves reach a few days or
29 weeks of age and have put on an insulating blubber layer.
30 Before that, they would lose heat and die in the cold

water.

Two levels of research could be envisaged. Both should be done by investigators qualified in bioacoustics, preferably those of whales. There are lots of these people around, mostly in the States. These researchers should have access to quantitative information on the sound levels and frequencies produced by all types of oil and gas exploitation, particularly those produced by compressors in oil or gas lines.

Two types or two levels of intensity of research might be envisaged. Firstly, passive listening. The investigators could or would proceed to a variety of exploration equipment in the delta and monitor all water-borne sounds in their vicinity. At the same time, they would observe the distance of displacement of white whales from these areas of noisy activity.

Secondly, experimental noise-making. By means of a sound simulator placed near a herd

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 of calving whales, anywhere in Arctic Canada which is
2 suitable, the investigators would observe noise levels
3 which disturb these concentrations, and relate their
4 findings, for example, to expected noise levels from
5 an underwater gas pipeline in shallow water with a
6 shore based compressor.

7 Clearly, the second type of
8 experiment would, by itself, involve much more dis-
9 turbance. It is my opinion that the first -- the passive
10 listening -- is more obviously justified than the second,
11 if more precise data are judged to be needed; because
12 the investigator becomes so much part of the problem in
13 the second type. Such information is not being gained
14 at the present time either by governmental scientists
15 or by the oil and gas industry.

16 To elaborate on this point about
17 the investigators part of the problem, there are perhaps
18 about 50,000 white whales in Canadian waters in general.
19 If one is going to disturb them, one would have to dis-
20 turb perhaps 500 in order to do the experiment. This is
21 one percent of the population. Now, if you're going to
22 study the effect of oil pollution on an invertebrate, you
23 can take a few animals in an experimental setup and you're
24 disturbing only a minute fraction of the total population
25 of the organism. But at this level, you're beginning
26 to disturb a significant fraction in order to do the
27 experiments and you're beginning to run into some kind
28 of cost benefit problem of whether the experiment really
29 justifies the results achieved. At least, that's my
30 opinion, and there seems to be a sort of ethical dilemma

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 eventually, of at what point is the experiment justified
2 in terms of the results that would be achieved.

3 I also stated in a general way
4 that monitoring of distribution and numbers of whales
5 has been done in the past, up to date, should be con-
6 tinued.

7 Recommendations. With such
8 incomplete knowledge, what action can be recommended?
9 I believe that it would be prudent to take action which
10 would prevent the calving animals in the delta from being
11 subject to the possibility of disturbance, throughout
12 the whole delta simultaneously. That is I believe that
13 a sanctuary or reserve should be set up in the western
14 part of the delta where the main mass of whales occurs
15 in July, somewhat as shown in my figure two, though I
16 have no precise view on boundaries at this point.

17 This reserve should be totally
18 free from all disturbance, including hunting.

19 THE COMMISSIONER: Pausing
20 there Dr. Sergeant, could we just look at figure two
21 while you're discussing this? Oh, I see.

22 A The lowest graph. I think
23 I am, at this stage, more interested in the principle
24 than the details of the boundaries.

25 This reserve should be totally
26 free from all disturbance, including hunting, construction
27 of artificial islands and of a gas pipeline. The area
28 of such reserves should be the same as, or greater than,
29 the area of the main mass of the whales found in the
30 western area of the delta in most years, a reference to

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 figure four or five.

2 The alternatives that have been
3 suggested to me are, firstly, that island construction
4 should be suspended in summer. This seems, to me,
5 unrealistic since the majority of islands are constructed,
6 as far as I can understand with drag line, suction dredge
7 and barge, or finished thereby; and are most cheaply
8 supplied by barge for construction of the superstructures
9 necessary for their functioning.

10 The second alternative, is that
11 island could be set at a considerable distance apart
12 and that wells could be drilled laterally. Well, there
13 I run into an area of ignorance. I don't know from the
14 geology from the oil industry, which I know very little
15 about, what kind of placement of wells in shallow water
16 is practical -- is needed and so on.

17 In spite of these two suggestions,
18 I think that such a practice, the growth of islands
19 throughout the delta, if unchecked, will lead to the
20 possible result that the whales will leave the Mackenzie
21 delta to attempt to calve elsewhere and I cannot see any
22 alternative rivers in the neighborhood of the Mackenzie
23 that could receive a large number of whales. No other
24 neighboring rivers received them now, except the
25 Mackenzie in July.

26 The area of Liverpool Bay and
27 the Anderson River mouth, received whales in late July,
28 after they have left the delta. Probably this area opens
29 later and the whales would have to postpone calving which
30 is possible to such sea mammals. However, the warm water

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 available in the Anderson mouth is very small for such
2 a large number, about 5000 that inhabit the Mackenzie
3 at present and the variety of oceanographic conditions
4 from season to season could permit ice to close such a
5 small river off in some years. By contrast, in the
6 Mackenzie Delta the whales have a choice of the western,
7 central or eastern side, according to ice patterns in
8 July.

9
10 It may seem rash to argue
11 strongly for a firm reserve or sanctuary in the absence
12 of sufficient hard data on the effects of disturbance on
13 whales. However, all experience with sea mammals points
14 to the need for prudent timely action. Thus, in the east
15 coast harp seal fishery, enough preliminary research was
16 available to justify international action by Canada to
17 have initiated controls on the fishery in 1952. This
18 action, which would have maintained a steady fishery,
19 was not taken. Only in 1961, and slowly up to the
20 present, have increased controls been placed on the harp
21 seal fishery, at the cost of hard negotiation with other
22 nations and with the domestic fishery, a declining
23 fishery and much cost and loss of prestige to Canada.

24 THE COMMISSIONER: By that,
25 you mean restrictions on the catch?

26 A Yes. Continued restrictions
27 on the catch. I maintain that a parallel applies here,
28 as all analogies, it's not exact. but I think it's close
29 enough to be -- meant to be brought in. The population
30 of white whales which calve in the Mackenzie is virtually
the whole of the population in the Beaufort Sea. I

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 postulate that simultaneous oil and gas activities through-
2 out the whole delta in July, each year, could so disturb
3 the whale herd that they would be unable to reproduce
4 successfully. In time, the herd would die out. If we
5 wish to maintain the herd, we must initiate measures
6 now which we can be certain will allow its successful
7 reproduction annually. Remedial measures would be more
8 costly in every way.

9 THE COMMISSIONER: Dr. Sergeant,
10 these are your views and those of your colleague, Dr.
11 Hoek -- Mr. Hoek.

12 A I have to admit that since
13 Mr. Hoek has been on a French course for some months,
14 more opportunities for consultation with him in the
15 later stages have been very few, so basically, they are
16 my views. I've been a bit loose about "I" and "we"
17 but he made observations as well.

18 THE COMMISSIONER: Well, he
19 perhaps could send us his views in the French language.

20 MR. BAYLY: We can only ask him,
21 sir. Could we then turn to the evidence of you, Dr.
22 Smith and have you present that to the Inquiry, please?

23 WITNESS SMITH: The aboriginal
24 people in western North American Arctic have been
25 dependent on sea mammals since their first occupation
26 of the coastal regions of Alaska over 3,000 years ago.
27 Because the ringed seal is the most abundant of the
28 marine mammals and available throughout the year, it
29 formed the basis of the coastal Inuit economy. Presently,
30 the ringed seal and to a much lesser extent, the bearded

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 seal, provide an important source of protein and part of
2 the cash income of most Arctic coastal villages. In
3 addition, the ringed seal is the main prey species of
4 the polar bear and one of the important food items of
5 the arctic fox. Both these species, in turn, provide an
6 important part of the overall cash income of coastal
7 hunting villages.

8 The Inuit from five western Arctic
9 villages; Tuktoyaktuk, Paulatuk, Sachs Harbour, Holman
10 and Coppermine, hunt the seals of the Beaufort Sea,
11 Amundsen Gulf and Coronation Gulf. Few studies have
12 been conducted in these areas. Stefansson, in a trip
13 across the southeastern Beaufort Sea, from a point in
14 Alaska, gave some useful information on the distribution
15 and apparent movements of seals in the offshore ice of
16 the western Beaufort Sea areas north of -- and north
17 of Banks Island.

18 Abrahmson discussed the dis-
19 tribution and utilization of ringed seals and bearded
20 seals in the Tuktoyaktuk and Cape Parry areas, and also
21 studied the resource utilization including marine
22 mammals of the Coppermine, Holman, Bathurst Inlet, and
23 Perry Island communities.

24 Usher, in the mid-sixties,
25 studied the economics of seal hunting at Coppermine,
26 Holman and Sachs Harbour and gave some data on the size
27 composition of seals taken during one season at Sachs
28 Harbour.

29 In 1972, Dr. Ian Stirling,
30 who will be testifying a little later on, I believe, made

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 recordings of the underwater sounds made by ringed seals
2 near Holman in the Prince Albert Sound area of western
3 Victoria Island. Data on the techniques of a capture-recapture
4 program and details of the catch composition in 1971
5 at Herschel Island were given by a paper which we pub-
6 lished in 1973. I also have given a brief description
7 of the interrelationships of seals and their predators
8 in the Beaufort Sea, in a paper recently published.

9 In 1972, Burns and Harbo, in
10 Alaska, conducted an aerial census of ringed seals from
11 Point Lay to Barter Island on the northern Alaska slope.

12 Other studies of pinnipeds in
13 Alaska have mostly been concentrated further to the
14 west in the Bering and Chukchi Seas.

15 In 1975, Stirling and Smith
16 discuss the interrelationships of arctic ocean mammals
17 and Smith and Geraci, the role of Arctic marine mammals in
18 the ecosystem with a discussion of the needs and direction
19 of future research. Also in 1975, Smith and Armstrong
20 discuss the levels of mercury in the marine mammals and
21 principal prey species of the Inuit from Holman, Northwest
22 Territories.

23 In 1975, Smith and Stirling
24 dealt with the description and function of the subnivean
25 or subsnow seal lairs and the breeding habitat of the
26 ringed seal in general. In a recent paper, yet unpub-
27 lished, I've described the arctic fox in its role
28 as^a/predator of ringed seal pups in the Amundsen Gulf.
29 In another recent paper, also yet unpublished, I've
30 discussed the incidence and possible causes of disorienta-

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

tion in arctic seals in general.

Dealing specifically with the Beaufort Sea, Stirling et al, in 1976, discussed the abundance and distribution of ringed and bearded seals. Smith and Geraci, in 1976, reported on experiments conducted on captive ringed seals in order to assess the effect of their contact with crude oil in the case of an offshore well blowout or large scale oil spill. The research done, to date, does not yet provide us with the full capability to predict the effects of industrial development on ringed seals in the Beaufort Sea, and especially, not of the effects of a general disturbance by an increasing occupation of the area.

I'd like, at this point, to give a brief description of the biology and ecology of the ringed seal. The ringed seal is a medium size true, or hair, seal; adults weighing approximately 130 pounds, on the average. It is a circumpolar species, distributed along the Arctic mainland and island coastlines, and also far offshore at certain times of the year. The species is solitary but seasonal aggregations may occur in the spring when it hauls out on the ice to molt, or in the fall when it feeds on concentrations of small fish, and appears to be moving in groups.

The ringed seal is a generalist in its feeding, taking whatever plankton, bottom invertebrates or fish that are available. In the winter, the Arctic cod is the main food item and in the summer planktonic crustacea are also important food components. The ringed seal appears to move inshore to feed in the summer

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 months but a recent study shows that it is capable of
2 very deep dives, and the far offshore areas of consider-
3 able depth, are probably important winter feeding areas
4 for the adolescent segment of the Beaufort Sea population.
5 This is especially in the areas of constantly reoccurring
6 leads during the winter months, which has been referred
7 to before as the shear zone or transition zone -- the
8 edge of the polar pack ice.

9 In fall, during freeze-up,
10 ringed seals use open leads and cracks in the ice to
11 surface and breathe. Wind and ice pressure later create
12 ridges and ice hummocks in some areas. These areas also
13 have cracks associated with the pressured ice, which the
14 seals use as breathing holes. As the ice begins to
15 solidify, the seals begin actively to keep their breathing
16 holes open by abrading the ice -- the forming ice --
17 with the claws of their foreflippers.

18 The preferred breeding habitat
19 of the ringed seal is a stable fast ice of large bays
20 and fiords. The birthing season occurs in mid-April,
21 actually beginning around the middle of March and peaking
22 around mid-April, and at this time one pup is born to
23 each pregnant female in a birth lair scratched out of the
24 snow above the breathing hole in the ice. Lairs are
25 usually found in drifts in the lee and windward side
26 of pressure ridges and ice hummocks. Nursing probably
27 extends for a period of approximately two months.
28 Breeding occurs shortly after the pup is born and there
29 is a delay in growth of the embryo for approximately
30 80 days. The period of delayed growth, plus the active

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 growth period makes the effective gestation period one
2 year and serves to synchronize the annual reproductive
3 effort.

4 The bearded seal which is much
5 less abundant than the ringed seal in the western Arctic--
6 in the whole of the Arctic, shows^a patchy distribution
7 and is important to the Inuit, mainly as a source of
8 leather and protein. It's a much larger seal, adult
9 females weighing as much as 900 lbs. and the leather is
10 the main source of boot soles and that type of thing.

11 Along the mainland coast is
12 found in relative abundance in such areas as Liverpool
13 Bay and south of Herschel Island. Along the west side
14 of Banks Island, the area between Sachs Harbour and
15 Norway Island contains a relatively high number of this
16 species. The patchy distribution is probably directly
17 related to their dependence on areas of good benthic or
18 bottom invertebrate production where they feed. The
19 comparatively low number of bearded seals in the western
20 Canadian Arctic probably also reflects the low benthic
21 invertebrate diversity and production in the Beaufort Sea.
22 This was referred to by Dr. Grainger, I believe.

23 I'd like to give a brief summary
24 of the studies that we began in the Beaufort Sea area
25 in 1971 and which led up and was extremely useful back-
26 ground to the Beaufort Sea study which we did in 1974,
27 and which was directly related to the effects of oil
28 blowouts on ringed seals.

29 My studies of ringed seals in
30 the Amundsen Gulf - eastern Beaufort Sea area began in

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1
2 1971. We were fortunate because without this headstart,
3 we could not have carried out the program of testing
4 the effect of oil on seals, which was our specific role
5 in the recent Beaufort Sea program. Even had we been
6 able to develop the field techniques required to capture
7 and maintain live experimental subjects in the short
8 time constraints of the Beaufort Sea program, we would
9 not have been able to interpret the results without the
10 knowledge accumulated from several different sources over
11 the four years preceding this program.

12 In 1972, a small field labora-
13 tory was erected near a netting site on the east side
14 of Cape Parry, Northwest Territories, and at the same
15 time, an indoor seal holding facility was established
16 at the Ontario Veterinary College in the University of
17 Guelph. These facilities provided the opportunity to do
18 short-term experiments on large numbers of freshly
19 captured seals in the field and to continue these experi-
20 ments on a subsample of animals at the indoor facility
21 for as long a period as desired.

22 This yielded valuable informa-
23 tion on several new topics, including baseline
24 physiological parameters. Included among these were
25 detailed studies of blood which have proved to be useful
26 monitors of population health status. Comparing values
27 between netted seals and those which were shot, gave
28 rather startling results.

29 THE COMMISSIONER: Which were
30 what?

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 A Which were shot. There's
2 been an omission in the --

3 THE COMMISSIONER: Shot.

4 A Yes, that's right. I'd
5 like to explain that shot animals that are killed
6 instantaneously, give us what we consider to be normal
7 blood values as opposed to animals which have been caught
8 in nets which give us -- reflect stressed animals. The
9 netted seals showed evidence of stress which significantly
10 altered blood cell concentration and distribution. This
11 was important not only in that, for the first time, we
12 were able to map the picture of stress in seals, but
13 also because it shed light on the confusing and inconsist-
14 ent so called "normal" blood values which have been
15 reported for related species.

16 In 1972, the seal capture
17 operation was moved to Cape Parry. This was the same
18 site used for the 1974 Beaufort Sea experiment. The
19 results of this study, which sought to determine the
20 effects of immersion in, and ingestion of, Norman Wells
21 crude oil, were rather surprising and really help to
22 underscore the value of integrated field and laboratory
23 impact studies. Possibly because of the atypical
24 late ice conditions in the Beaufort Sea in the summer
25 of 1974, the 96 ringed seals which were captured at
26 Browns Harbour were in a poorer nutritional state than
27 animals collected at Herschel Island in 1971 and at the
28 same Cape Parry netting site in 1972. This was strongly
29 supported by hematologic data which could be compared to
30 those from the 1971 Herschel Island blood study. The

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 findings pointed to starvation and stress induced by
2 the adverse environmental conditions.

3 There was a marked difference
4 in the reaction to oil immersion between seals immediately
5 after capture in the field, in the 1974 experiment, and
6 those transported to the Ontario Veterinary College --
7 later on in the same season. The seals in the Guelph
8 study died within 72 minutes of exposure to a surface
9 layer of oil but the six seals in the field operation
10 or study, survived a 24 hour exposure with only transient
11 eye problems, and no evidence of permanent damage.

12 The basic difference between
13 the two study groups was the stress of transportation
14 coupled with incomplete acclimatization to captivity of
15 the Guelph seals. These findings have important implica-
16 tions. Imagine the reaction to an impact statement based
17 on the Guelph experience, where seals -- "all seals died
18 within 72 minutes of exposure to oil". On the other
19 hand, if the captive experiment had not been done, we
20 would not have known that a seal's response to oil can
21 be greatly influenced by stress, the same kind of stress
22 perhaps, that we have noted in wild seals exposed to
23 poor ice conditions, food inavailability, protracted
24 moult, parasites, diseases and other factors not yet
25 identified. In fact, a realistic interpretation of the
26 effects of oil , could not have been achieved without
27 the combined experience from the field and laboratory
28 experiments.

29 All of the data accumulated
30 during the Beaufort Sea study suggest that a major

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 environmental disturbance, including a blowout would
2 not affect a seal population uniformly. Older seals and
3 seals in poor nutritional condition are likely to be
4 more sensitive than younger healthy animals. A blowout
5 during a bad ice year such as 1974, would be more
6 detrimental to seals which, as a whole, were in poorer
7 general condition and presumably even more harmfully
8 selective to the older animals within the population.

9 The studies conducted during
10 the Beaufort Sea program are of an acute nature and will
11 provide an accurate picture of the consequences of an
12 oil blowout on ringed seals only when exposure to oil is
13 of a short duration. This is likely to be the case only
14 during the open water season from approximately July to
15 October, when the seals are free to move out of a con-
16 taminated area.

17 During the winter months, ringed
18 seals occupy lairs under the snow in both the nearshore
19 and offshore stable ice in the Amundsen Gulf and
20 Beaufort Sea. In March through May, as I said before,
21 the females give birth to a single pup in such a lair.
22 While areas of exceptionally good breeding habitat have
23 been identified in certain sounds and bays, these are
24 relatively few and therefore, the less densely occupied
25 vast areas of offshore ice in the Amundsen Gulf and
26 southern Beaufort Sea contribute significantly to the
27 overall productivity of the region.

28 The effect of exposure of breeding
29 animals to an oil film under the ice cannot properly
30 be assessed experimentally, because the birth lair is

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 connected to the sea by a breathing hole through the
2 ice, it would quickly become fouled by oil from the
3 frequent coming and going of the adult female and also
4 from recent discussions on how oil distributes itself
5 under the ice, any breathing hole that would be in the
6 area where oil is running under the ice, would quickly
7 become filled with oil and apparently oil which fills
8 a hole then is distributed onto the surface. So what
9 would happen, is that you'd have a completely fouled
10 birth lair.

11
12 The longer suckling period of
13 the ringed seal and slower rate of growth would probably
14 increase the possibility of thermo-regulatory problems
15 caused by an oil covered birth lair. It is not known
16 whether the adult females would move out of the area
17 thus abandoning the helpless pup or try to take the pup
18 with her. Either of these responses would tend to in-
19 crease the probability of pup mortality. If the pup and
20 female remained in the contaminated area, there is a
21 possibility that an oil fouled birth lair would melt
22 earlier. This would expose the helpless pup both to
23 the cold and to predation by Arctic foxes and polar bears.

24 During this period, the pro-
25 bability of ingesting large amounts of oil accidentally,
26 or from oil covered food species is not great. However,
27 it is important to determine whether any of the prey
28 species of the ringed seal might concentrate hydrocarbon
29 metabolites which might be more toxic to the seal than
30 the crude oil.

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 The non-breeding part of the
2 ringed seal population which forms a considerable pro-
3 portion in the eastern Arctic; my estimates were that it
4 was close to 69 to 70 percent. The non-breeding part
5 tends to be distributed in the offshore areas of less
6 stable ice. During the months of April through May in
7 the southern Beaufort Sea, large numbers of immature
8 animals appear to be associated with the system of large
9 leads running from Herschel Island towards the north-
10 western corner of Banks Island. This is the edge of
11 the polar-pack referred to before as the transition or
12 shear zone.

13 This also is the area where the
14 proposed Canmar 1 and 2 drill rigs will be located.
15 It is not known if this large segment of the ringed seal
16 population is excluded from the more stable ice by the
17 older breeding seals or if they are dependent on the
18 open water because of greater food abundance or avail-
19 ability. The response of the considerable number of
20 seals associated with areas of open water to an oil well
21 blowout, might be to move into the various productive areas
22 under the ice, thus crowding the breeding populations and
23 resultingⁱⁿ intraspecific stress with a resulting rise
24 in mortality. Immature animals which could not feed
25 successfully without the presence of uncontaminated open
26 water might starve.

27 Beginning in early May, ringed
28 seals start hauling out onto the ice surface to bask in
29 the sun. This hauling out behaviour is associated with
30 the annual moult. During this period, the large blubber

Percy, Grainger, Barry
 Sergeant, Smith, Stein
 In Chief

1 reserves of the seals are reduced drastically. The exact
 2 cause of this weight loss is not known but it is definitely
 3 not caused by a complete cessation in feeding since
 4 recent evidence has shown ringed seals to be night feeders
 5 at this time of the year. The large weight loss associated
 6 with the moulting period indicates that this is possibly
 7 the most stressful period in the life cycle of the sub-
 8 adult and mature ringed seals. Additional stress imposed
 9 by an oil blowout, either by long immersion in oil, by
 10 interference with the regular hauling-out behaviour, or
 11 by necessitating large scale movements to avoid a con-
 12 taminated area might have serious consequences.

13 MR. BAYLY: Dr. Smith, before
 14 you go on, I wonder if you could explain the term "intra-
 15 specific stress"?

16 A This would be a repulsion
 17 of the animals moving in from the open water leads by the
 18 adult animals that have occupied the subsurface of the
 19 ice. We have good evidence that this type of thing occurs
 20 from scars and bite marks, close to prime breeding habitat
 21 usually on the less mature animals.

22 At this point, I'd like to go
 23 over the general characteristics of the Beaufort Sea.
 24 Generally, the Beaufort Sea is seen to be less productive
 25 than other Arctic marine habitats. Certainly comparisons
 26 between numbers of seals produced per unit of fast ice is
 27 much lower in the Beaufort Sea and Amundsen Gulf than
 28 along the east and south coast of Baffin Island. This is
 29 well supported by other recent studies involving
 30 primary and secondary producers. You heard about this

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

yesterday from Dr. Grainger.

Recently, we have accumulated evidence that the annual production of ringed seals -- ringed seal pups, that is -- can fluctuate greatly. This is contrary to the previous assumptions that ringed seal populations have a relatively stable recruitment, or annual production. The exact causes or mechanism of these fluctuations are not known but they probably relate ultimately to fluctuations in annual marine productivity.

In such an area of low productivity with climatic features that might result in large scale variation in the annual standing crops of plankton and fish, the single most important adaptive feature of the seal population would be the ability to move to new and more favorable areas. We have direct evidence from our capture release programs that seals can move long distances. We've branded and tagged seals in two years. The first year was in 1971 at Herschel Island where we released 108 marked ringed seals and in 1972 we released 117 marked seals from Cape Parry -- on the east side of Cape Parry in Darnley Bay. We've had only three returns from the Inuit hunters, but these returns have shown us that seals can move as far away from Cape Parry as Point Barrow, Alaska in one case and from Herschel Island to Sachs Harbour in the other case and Herschel Island to Holman Island in the third case. So that we have, for the first time gained some direct evidence on the movement of seals, which is considerable in the Beaufort Sea -Amundsen Gulf area.

Strong indirect evidence also

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 supports the idea that there is a fall movement of seals
2 westward along the eastern Beaufort Sea coast. This is
3 from the netting effort where we were capturing animals
4 in the late fall. Presumably, a reverse movement takes
5 place in the summer during and after the breakup of the
6 ice. Increased activity at these times of year might
7 have serious effects such as changing the seasonal dis-
8 tribution of seals, resulting in increased natural
9 mortality or shifts of whole populations out of an area.

10 The village of Holman on the
11 west coast of Victoria Island where I have been doing
12 continuing studies for the last five years, takes the
13 largest number of ringed seals in the western Canadian
14 Arctic. Preliminary calculations of seal production have
15 been made based on population estimates of seals in the
16 Amundsen Gulf and reproduction rates derived from over
17 6,000 seal specimens obtained from the Inuit hunt. These
18 indicate that in no way could the peak annual harvests
19 of upwards of 8,000 ringed seals be supported by the pro-
20 duction of the Amundsen Gulf alone.

21 Direct tagging evidence shows
22 that seals from the south eastern Beaufort Sea are taken
23 at Holman. I believe that the annual harvest at Holman
24 is directly dependent on parts of the Beaufort Sea for
25 its sustenance. Exact quantitative extent of this
26 dependence is not yet calculated.

27 Ringed seals in the Beaufort
28 Sea and Amundsen Gulf areas appear to depend on the whole
29 inshore and offshore areas. I cannot make any simple re-
30 commendations about certain geographical areas to protect

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 or ways of going about petroleum exploration to minimize
2 the possible adverse effects on the population. In my
3 mind, the creation of a North Sea type of offshore oil
4 field in the southeastern Beaufort Sea, with its attending
5 disturbance will certainly affect the seasonal pattern
6 of movement and dispersion of seals. I feel strongly
7 that the Beaufort Sea and Amundsen Gulf areas are one
8 system and that the mobility of the marine mammal popula-
9 tions in these regions are important for their continuing
10 wellbeing. The possibility of barriers to movement caused
11 by a large scale development such as an offshore oil
12 field cannot be discounted even though they cannot be
13 tested experimentally "before the fact".

14 I'm going to go through some
15 recommendations for future research.

16 THE COMMISSIONER: Just before
17 you do, Dr. Smith, you weren't suggesting that there is
18 a peak annual harvest at Holman of 8,000 ringed seals,
19 are you?

20 A Yes. In certain years,
21 in 1971 for example, from the 28th of February until the
22 16th of October, I purchased virtually every jaw of seals
23 killed in the area and these amounted to 5,445 animals.
24 It was an exceptional year in that there was open water
25 in the Amundsen Gulf which provided a flow edge hunting
26 situation which is extremely productive. For example,
27 the period from the 31st of March until the 5th of May
28 produced something like 1500 animals.

29 THE COMMISSIONER: Holman's a
30 village of about 300 people?

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 A About 250. It's quite
2 productive but there are other areas in the Canadian
3 that are as productive. Pangnirtung, for example, in
4 Broughton Island on the east coast of Baffin Island are
5 both similar. Actually, they have a yield per capita
6 of almost exactly the same as Holman.

7 Recommendations of a specific
8 type can be divided into two categories depending on
9 whether offshore oil drilling is a "fait accompli" or
10 not. If offshore drilling is to be delayed for some
11 time, points which should be further studied dealing
12 specifically with the effects of contact with crude oil
13 on ringed seals are as follows.

14 First of all, because of the
15 dependence of ringed seals on the fast ice habitat for
16 eight months of the year and the consequent longer period
17 of exposure to oil should an under-ice blowout occur,
18 more studies are needed on the chronic effects of contact
19 with oil. In particular, damage to eyes and kidneys
20 should be thoroughly studied. This would be a laboratory
21 type of experiment on animals which have been thoroughly
22 acclimatized into captivity.

23 The main long-term effect of
24 an oil well blowout will be the contamination of food
25 species and the reduction of food. The combined results
26 of periods of starvation and additional stress imposed by
27 the presence of oil in the water should be evaluated.

28 A study is needed on the reactions
29 of young and old ringed seals to additional stress during
30 the period of moult. Consideration should also be given

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 to the further stress which could be induced by reduced
2 food intake prior to and during the moulting season.

3 If the beginning of a gradual
4 ^a buildup of/large offshore oil field is imminent, serious
5 thought should be given to minimizing the adverse effects
6 of such a development and to monitoring the effects.

7 In the first category of prime importance would be to
8 obtain some information on the pattern of movements in
9 order to pinpoint migration routes, if they do in fact,
10 exist. These data could be obtained over the long term
11 by our/continuing capture - release experiment but more quickly if
12 an intensive sonic telemetry program was carried out.

13 This is a sonic tag attached to a number of animals and
14 followed over a period of time. One of the things that
15 we really are not sure of yet is whether there is a real
16 direction, in fact, of migration because we've been
17 sampling from coastal points on the coast line. Although
18 the impression is very strong that you have a concentrated
19 movement to the west in the fall, we haven't proven it
20 yet, by any means, and we won't be able to get at that
21 without this type of program.

22 The information could serve as
23 the basis of specific recommendations such as the avoiding
24 of certain critical localities or the cessation of activity
25 during critical time periods.

26 In the category of monitoring the
27 effects of what generally could be called disturbance,
28 the following research programs would be useful.

29 Annual studies of stress indica-
30 tors in freshly captured or shot seals -- we're in fact

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 doing this as part of our continuing program. It is
2 essential to begin a program of research to quantify
3 the several indicators of stress which we have recently
4 identified. This involves more detailed biochemical work,
5 both in the field and in the laboratory on captured animals.

6 The recently documented large
7 scale annual variation in the production of ringed seals
8 and the lack of data on the lower producers points out our
9 inadequate knowledge of the lower trophic levels. A
10 program should be designed to monitor primary and secondary
11 productivity periodically throughout the year and from
12 year to year, over a large part of the Beaufort Sea.
13 There are ample opportunities to do this type of thing
14 with the many and varied programs going on every year in
15 the Beaufort Sea. It would be matter of setting up some
16 sort of standardized system to do it.

17 The collection of accurate
18 statistics on catch per unit of effort in the important
19 seal hunting communities in order to determine if the
20 exploited seal stocks have been or are diminishing. One
21 of the problems we have with catch statistics is that we
22 can't sort out whether there's been a decrease in hunting
23 effort from year to year and this occurs frequently in
24 Arctic communities. For example, Coppermine in 1973
25 all of a sudden became a source of employees for Gulf
26 Oil, specifically, so if you looked at the catch from
27 Coppermine, you'd see a serious decline in ringed seals
28 that year and in following years, and this is mainly
29 based on a decrease in effort.

30 The collection of an adequate age

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 sample of seals from the important hunting communities
2 should be done on a yearly basis-- we've been doing
3 this in Holman -- to document shifts in production or
4 in certain age segments of the population.

5 The annual surveying of hauled-out
6 seals during the initial development of the oilfield to
7 obtain population estimates, especially in the critical
8 shear zone or transition area.

9 And finally, a continuation of
10 the breeding habitat survey started in -- which we
11 started -- in 1974 which is the best single indicator
12 of ringed seal productivity. This involves flying to
13 preselected points in the Amundsen Gulf and searching
14 these ice areas using a trained dog which is able to
15 pick up all the subsnow birth lairs and actually quanti-
16 fying the number of birth lairs per unit of fast ice.

17 The difficulties in studying
18 most components of the Arctic ecosystem can be overcome
19 only with long term studies. After eight years of investi-
20 gating ringed seals, only recently have we found that
21 there are large scale variations in production, abundance,
22 nutritional and health status. More time will uncover
23 more relevant factors and perhaps give us some insight
24 into their wide-felt influence. The pace of the Arctic
25 is too slow to be subjected to headlong invasions by
26 scientists working against unrealistic time constraints.
27 Such was the Beaufort Sea Project. These invasions we
28 call impact studies and rightly so, as the studies
29 themselves are sure to have some impact on the system.

30 The more sensible approach is to

Percy, Grainger, Barry,
Sergeant, Smith, Stein
In Chief

1 start now on a series of integrated studies, some
2 directed to specific trophic levels including the con-
3 suming native people; others on areas that may be treated
4 as closed systems so that we may gain more knowledge of
5 the controlling factors inducing natural variations.
6 Only then can we begin to understand the effects of man-
7 induced influences.

8 Such studies are more practical
9 and therefore more economical; they are more productive
10 and, in simple fact, they make more sense.

11 THE COMMISSIONER: Now Dr.
12 Smith, you say that there should be integrated studies,
13 some of them directed to specific trophic levels. What
14 do you mean "trophic levels"? What does that word mean?

15 A I'm referring there, again
16 to the food chain, if you will, and in the case of the
17 ringed seal, for example, we have very good information
18 on what kinds of food it's using and we're starting
19 from laboratory studies to know how much food it needs.
20 But one of the things that we don't know about is how
21 much food there is. Really, the information on the
22 Beaufort Sea is inadequate. The ringed seal, for example,
23 which feeds in the winter time on Arctic cod, very
24 likely the populations are affected if there is a
25 reduction in these cod. We have no way of knowing whether
26 there are large scale fluctuations in the density of cod
27 at this time. As a matter of fact, whole areas of the
28 Beaufort Sea could be vacated by cod populations and we
29 wouldn't know it until a year later when we saw the effects
30 on the ringed seal population.

Percy, Grainger, Barry
Sergeant, Smith, Stein
In Chief

Q Right. Well, that's the
point that, in a general way, Dr. Grainger made.

A Yes, certainly.

MR. GOUDGE: I wonder, sir,
if we might break for coffee now?

MR. BAYLY: I have Dr. Stirling
here and if we can install him on the panel at coffee
time, then we can complete the evidence in chief prior
to cross-examination.

THE COMMISSIONER: Fine.

(QUALIFICATIONS & EVIDENCE OF T.G. SMITH MARKED
EXHIBIT 454)

(PROCEEDINGS ADJOURNED AT 11:15 A.M.)

Percy, Grainger, Barry
Sergeant, Smith, Stein
In Chief

(PROCEEDINGS RESUMED AT 11:35 A.M.)

THE COMMISSIONER: Before we go ahead with Dr. Stirling's evidence, could I just ask Dr. Sergeant about a couple of things? On page 13 of your testimony, Dr. Sergeant, you said that - - this is on page 13 of this yellow presentation at the bottom of the page, you said:

"The population of white whales, which calves in the Mackenzie Delta, is virtually the whole of the population in the Beaufort Sea."

That is the 5,000 whales are virtually the whole of the white whale population of the Beaufort Sea. You said that:

"Simultaneous oil and gas activity throughout the whole delta in July each year could so disturb the whale herd that they would be unable to reproduce successfully."

Just so I have this, they would be unable to reproduce successfully because if driven from the warm waters of Shallow Bay and the other channels of the delta, there would be no other place, so far as you know, where they would be able to discover warm water for calving?

WITNESS SERGEANT: That is correct, sir. There would not be, in my opinion, any other rivers of sufficient size or opening sufficiently early in connection with the open Beaufort Sea. However, strictly speaking, the first statement should read:

"The population of white whales that calve in

Percy, Grainger, Barry
Sergeant, Smith, Stein
In Chief

1 the Mackenzie is virtually the whole of the
2 reproducing part of the population."

3 We don't know the details, but we suppose the immature
4 animals and so on do not come into the Mackenzie.

5 Q Then you say:

6 "In time the herd would die out. If we
7 wish to maintain the herd we must initiate
8 measures now which we can be certain will
9 allow its successful reproduction annually."

10 The principal measure you have proposed is the
11 establishment of a sanctuary in West Mackenzie Bay
12 where the animals would be free from hunting by Inuit
13 and other hunters, and where they -- an area which
14 would be forbidden to oil and gas exploration activity
15 of any kind. I just wanted to make sure -- I keep
16 losing the map of that -- oh, here we are, yes, figure 2
17 the proposed sanctuary, and I know you're not wedded
18 to these boundaries and so on and so forth, I appreciate
19 that, but you're choosing the area of principal
20 concentration for purposes of calving each summer and
21 you're saying,

22 "We should establish that as a sanctuary.

23 We shouldn't allow the Inuit to hunt the
24 animals there,"

25 and they do now hunt them and take them in fairly
26 large numbers each summer. I think the principal har-
27 vest is at West Mackenzie Bay -- perhaps not, I've
28 forgotten, but it doesn't matter. At any rate, you are
29 saying we should forbid any oil and gas activity in
30 that sanctuary in order to preserve this herd. I've

Percy, Grainger, Barry
Sergeant, Smith, Stein
In Chief

1 got you right, have I?

2 A Yes, I'm supposing that
3 hunting itself produces stress. The main hunting in
4 fact takes place in Kugmallit Bay, and details of
5 capture are in the Slaney Report, the 1975 report.
6 This is a stress of some kind, and it is applied to
7 different parts of the delta. I'm supposing that if
8 you add to this the stress of simultaneous activities
9 of various kinds associated with the oil and gas
10 activity, over the whole delta, you would then possibly
11 or probably add up to a total stress which is very
12 large at the period of reproduction. The point
13 appears to be that the warm water is necessary for
14 the survival of the calves for a period of a few days
15 or weeks, and that if they were disturbed away from
16 this warm water in an estuary constantly, this would
17 have effects on reproduction.

18 Q Well, let me just put my
19 concern to you. In the pipeline guidelines the
20 Government of Canada, the ultimate arbitrator of these
21 matters, has laid it down that a gas pipeline is
22 essentially one of the components of an energy corridor,
23 and if you look at the pipeline guidelines you will
24 see that they contemplate that if a gas pipeline is
25 built across the Mackenzie Delta, an oil pipeline will
26 follow. This Inquiry is to determine, so far as it is
27 possible, the likely impact of a gas pipeline and
28 corridor development on the northern environment,
29 which will include this herd of whales. What you're
30 saying is that the whole development picture in the

Percy, Grainger, Barry
~~Sergeant~~, Smith, Stein, Stirling
In Chief

1 delta would, if it encompassed the whole of the delta,
2 would lead to the dying out of this herd, and you're
3 proposing this sanctuary and I am just -- I think
4 you're the first person who has said that any sanctuary
5 should be established for a particular species, that
6 is absolutely inviolate; or perhaps you're not, but
7 that's what I think is very important about your
8 proposal.

9 A Yes, I did suggest that.
10 It seems to me that the rate of activity is going up
11 exponentially at the present time and without knowing
12 the scenarios of details, the simultaneity of the
13 various activities seems to be the critical point.
14 If one could conceive of a sanctuary for even a few
15 years, and then if activity wished to shift to that
16 area, another area be set aside also which was in
17 general important to the whales which could be used
18 as an alternative. That is another possibility; but
19 --

20 THE COMMISSIONER:
I'm not trying to get
21 you to back off it, I'm just thinking about it out
22 loud, so to speak. Allright, back to
23 Dr. Stirling.

24 MR. BAYLY: There were two
25 of them in the first instance.

26
27 IAN GROTE STIRLING, sworn:

28 MR. BAYLY: Q Could we
29 start, Dr. Stirling, by turning to your curriculum
30 vitae and having you put into the record your

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 qualifications?

2 WITNESS STIRLING: Well, I'll
3 be relatively brief here because it does go on. The
4 things that I think are important here, my full name
5 is Ian Grote Stirling. I did my Bachelor and Master's
6 degree at the University of British Columbia, and
7 my Ph.D. at the University of Canterbury in Christchurch,
8 New Zealand, where I worked on the Weddell seals in
9 the Antarctic. That work started in late 1965 and was
10 followed by a couple of years of work on fur seals
11 and sea lions in New Zealand and Australia. I came
12 back to Canada in 1970 in August to start work with
13 the Canadian Wildlife Service on polar bears, polar
14 bear population ecology, and seals as they related to
15 polar bears, and the ecological relationships between
16 those species in the pack ice ecosystems.

17 I've been working on marine
18 mammals, I guess, in polar regions for about ten
19 years. I've had a variety of teaching and research exper-
20 ience which doesn't probably need to be gone into.
21 I'm either a member or chairman of a variety of
22 national or international committees that deal with
23 either polar bears or seals and I've written -- I haven't
24 counted them --but somewhere between 50 and 60 scien-
25 tific and popular articles, the bulk of which would
26 be on seals and polar bears.

27 Q I understand, Dr.
28 Stirling, that you wish to begin with a slide presen-
29 tation.

30 A The purpose of this is

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 -- the slides is to show those people that aren't
2 familiar with the offshore pack ice habitat, simply
3 what it looks like. I'll be very brief with this and
4 then I'll go ahead and read the testimony.

5 For my own information, have
6 any slides like this been shown before? Have there
7 been slides of the --

8 THE COMMISSIONER: It doesn't
9 matter if they have been. We will willingly watch them
10 again.

11 MR. GOUDGE: Slides are always
12 welcome.

13 A The projector should
14 probably come down a little bit because I believe
15 there are some vertical slides that will go off the
16 screen.

17 I think that most of the
18 discussion doesn't need too much introduction. The
19 area in which most of the data were collected that
20 will form the basis of this particular discussion is
21 the Beaufort Sea area and Amundsen Gulf. This is a
22 year old now, but it simply illustrates movements of
23 tagged bears, and the main message to be gotten out
24 of this particular slide is that bears that inhabit
25 the mainland coast, the Amundsen Gulf, and the west
26 coast of Banks Island form one population.

27 There is also a degree of
28 exchange which takes place between the Western Canadian
29 Arctic and Alaska. You can see that the bulk of the
30 Alaskan tagging and re-capturing of Canadian animals

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 has taken place north of Point Barrow. No Alaskan
2 marked animals have been recovered east of Baillie
3 Island.

4 This is simply what the
5 situation looks like where polar bears build their
6 dens. They dig them in drifted snow over land, they're
7 occupied -- well, I'll go into that later. That's
8 what they look like, what you're looking for when
9 you're looking for dens in the spring. That is an
10 illustration of where dens occur predominantly in
11 the Western Arctic. The most important area is the
12 West Coast and South Coast of Banks Island. The
13 solid dots are active dens. The light circles are
14 where females with young cubs that have just left the
15 den have been located.

16 This is a ~~ringed~~ seal, named
17 for its obvious white rings. This is a photograph
18 of Dr. Smith's. I might add that it's a little bit
19 phony in that ringed seals don't haul up on the land.
20 This animal was netted as part of their experimental
21 work at Cape Parry. They normally remain pelagic
22 or free-swimming in the open water season, and they
23 haul up extensively on ice but do not normally use
24 land.

25 That's a bearded seal, named
26 for the big whiskers on its face.

27 Now this shows you what the
28 lead systems look like in the early spring, and there's
29 a very important couple of points that I want to make
30 here. One is that these lead systems open and close

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 throughout the winter, and where they're in the areas
2 that are opening it provides a place where there's
3 easy access for seals to breathe. It may even have some
4 influence on primary productivity or affect the
5 distribution of food species. In any case, there is
6 a fair concentration of seals in these regions.

7 That grey ice on the left
8 is what is known as young ice, and as that ice begins
9 to re-freeze as the leads get frozen over again, the
10 seals have to maintain their new holes in them. Their
11 holes are always made on the last available crack,
12 and you can see there the bears -- the seals are very
13 accessible to the bears when they're tied to breathing
14 holes in thin ice like ~~that~~ so that bears tend to
15 concentrate in these moving ice areas as well, because
16 of the easy access to seals. If you're a seal, then
17 you've got to breathe, you've got to come up somewhere
18 and that means that the bear simply has to wait by the
19 holes, hoping that a seal will come while he's there.

20 Now they maintain their
21 breathing holes. This happens to be rather a large one
22 done by a bearded seal late in the spring when the
23 surface ice has melted off, and they use the claws of
24 their fore-flippers to keep these holes open. You can
25 see the big claw marks in the ice.

26 When these holes first drift
27 over by a little bit of drift snow, the holes them-
28 selves are not readily visible. You can see that this
29 one has been broken in to show how it's hidden, but
30 from the snow around it is not readily apparent.

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 It is easily located, however, by a bear, by its
2 sense of smell.

3 In a similar situation where
4 ice forms together and then a little bit of wind blows
5 it together rather than apart, you quite often get
6 this rafting effect, or it almost makes a little bit
7 of a tent. The water then freezes underneath and the
8 seals can make holes underneath and have their own
9 enclosed area. This does provide a certain amount of
10 protection from bears as well, I suspect, because the
11 ice roofs are more difficult to break into than the
12 snow-covered layers.

13 These moving ice areas are
14 the most important habitat there is for polar bears
15 because they open and close, and because they get
16 that young ice formed on them, seals concentrate there
17 and so do bears.

18 Now, just for an illustration,
19 the jagged line at the top right underneath where it
20 says:

21 "Beaufort Sea,"
22 is the approximate outward limit of the presently
23 leased offshore acreage, and the slashed lines shading
24 is a diagrammatic illustration of the distribution of
25 the most important polar bear feeding areas in the
26 Western Arctic, and there is a fair degree of overlap.
27 The two dots there north of Tuktoyaktuk are the
28 locations of the proposed wells to be drilled next
29 year if the permit goes through.

30 This is what prime ringed seal

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 breeding habitat looks like. This aspect of the work
2 has been done in conjunction with Dr. Smith here over
3 the course of the last five years. We have worked
4 quite closely on some of these aspects. The long
5 drifts that he told you about, the seal layers, that's
6 what the habitat looks like. The long drifts the
7 seals have their breathing holes underneath and they
8 come up through and dig -- essentially dig snow caves
9 underneath. The bears are well aware of this and
10 walk along the ridges on the leeward side, smelling
11 out the drifts and digging them out; and as Dr.
12 Smith mentioned, a trained dog is equally -- well
13 maybe not equally but certainly is very good at finding
14 these as well.

15 This is what an old well-
16 formed drift looks like, to put you into scale a
17 little bit. You can tell the bears that hunt seals
18 at these breathing holes early in the spring when the
19 air temperatures are very cold because they put their
20 heads into the water a lot in their attempts to grab
21 seals when they come to breathe, and the water free-
22 zes on the fur.

23 Interestingly enough, the
24 polar bears don't usually eat the seal pups when they
25 kill them, and it appears now what they are actually
26 looking for is the much older -- this is a newborn
27 pup, they are about 10 or 12 pounds with not much
28 fat on them -- but what they are probably looking for
29 is a much older pup just before they're weaned, when
30 they're very, very fat, approximately 45%; or the

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In C hief

1 adult females when they're getting ready to wean the
2 pups.

3 You're in a different situa-
4 tion, of course, with Arctic foxes, which Dr. Smith
5 has documented in some unpublished work, preys very
6 heavily on ringed seals. Now these ringed seal carca-
7 sses, the pups and very large portions of the carcasses
8 of adult seals which are killed by bears are simply
9 left on the ice as carrion. The adults don't seem to
10 stache carcasses and return to them. They don't seem
11 to defend and eat as much as they want at a time often,
12 so they leave it, which leaves a very, very large
13 amount of meat and flesh lying around on the ice, which
14 is very important both to sub-adult bears, to their
15 survival, and to the Arctic fox, which forms the
16 largest part of the cash economy or support of economy
17 of the Inuit settlements of the Western Arctic.

18 These foxes move out on the
19 sea ice after it freezes in the fall and are out there
20 most of the winter following the polar bears around.
21 You find there are occasional sort of half-dens dug
22 in the snowbanks where they've slept for whatever
23 period they sleep, and then they find their tracks
24 following bears again.

25 This is simply, because I'm
26 going to refer later to the summer sea ice situation,
27 what it looks like in the summer when it starts to
28 melt, there's holes all over the place and you can
29 see there approximately two-thirds of the way down
30 from the top and two-thirds of the way over from the

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 left there's a polar bear to put you in scale, wander-
2 ing through and looking for seals which are still using
3 those areas from their old breathing holes from the
4 winter.

5 We can carry on with the
6 written testimony.

7 Research on polar bears
8 (urus maritimus) in the Western Canadian Arctic
9 (hereinafter referred to as the Western Arctic)^{was} initia-
10 ted by the Canadian Wildlife Service in 1970 --
11 beg your pardon?

12 THE COMMISSIONER: Is there a
13 written statement that I could have a copy of?
14 Thanks. Sorry to interrupt you. All right, well
15 start again if you don't mind, sir.

16 A Not at all.

17 Research on polar bears
18 (urus maritimus) in the Western Canadian Arctic
19 (hereinafter referred to as the Western Arctic) was
20 initiated by the Canadian Wildlife Service in 1970
21 to resolve questions involved with management of that
22 species. Although about 60 bears at that time were
23 being killed by Inuit, there were no data to determine
24 if the population could withstand that level of utili-
25 zation. Data were required on the distribution and
26 productivity of denning areas in relation to the
27 number of bears being harvested annually from the
28 population. Polar bears have been tagged in Alaska
29 for three years, but none had been killed in Canada.
30 Thus, data were required on the relative discreteness

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 of the two populations, and in particular on whether
2 polar bears produced in Canada were supporting the
3 Alaskan sport hunting of the species. Finally, non-
4 resident sport hunting of polar bears in the Western
5 Arctic began in the spring of 1970, making it essential
6 to obtain population data in order to respond to quer-
7 ies about the survival of polar bears in Canada.

8 Since the initiation of this
9 project, two additional but inter-related aspects
10 have developed. In November, 1973, Canada, Denmark,
11 Norway, the United States and the Soviet Union signed
12 an International Agreement on the conservation of
13 polar bears (which is Appendix 1 to this testimony)
14 which stated in part:

15 "Each contracting party shall take appropriate
16 action to protect the ecosystems of which polar
17 bears are a part..."

18 and

19 "They (the contracting parties) shall ...
20 consult with other parties on the management
21 of migrating polar bear populations, and exchange
22 information on research and management programs."

23 The second major development is the potential for
24 environmental damage created by offshore oil drilling.
25 Current plans for offshore oil exploration in the
26 Eastern Beaufort Sea call for the initiation of
27 drilling activity in the summer of 1976. If the
28 exploratory phase is successful, much more drilling
29 activity will ensue, followed naturally by production
30 for several years thereafter.

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

Recovery of tagged bears has demonstrated movements between Western Canada and Alaska and that the Inuit of both areas hunt this migratory population. Because of the International Agreement, possible detrimental effects to polar bears resulting from offshore drilling must be minimized. For example, as will be detailed later, the area in which the first drilling will take place is one of the most important feeding areas for polar bears in the Western Arctic.

Besides its obvious aesthetic value, the polar bear represents a substantial component of the cultural and economic base of the Inuit of the Western Arctic. At one time polar bear meat was used for food for both people and dogs, and the hides were utilized to a lesser degree for trade and the making of clothing. In more recent times, however, the principal motivation for polar bear hunting has been the sale of the hides, several of which sold for prices in excess of \$3,000 in 1973. A limited amount of meat is still utilized for food, both by humans and dogs. As such, there is a direct economic value in the polar bear resource, plus the sociological and cultural values of a self-supporting existence for the trappers and hunters involved.

Polar bears live primarily on ringed seals and to a lesser degree on bearded seals. However, when a polar bear kills a seal, it often leaves a large portion of the meat and entrails, and sometimes the fat as well, uneaten on the sea ice,

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 although hungry bears or family groups may occasionally
2 eat the whole seal, particularly if it's small. Thus
3 in the Western Arctic from freezeup in the fall to
4 breakup in the early summer, there is an abundant
5 high-quality alternate food source in the form of seal
6 carrion. Consequently, large numbers of Arctic foxes
7 go out onto the ice to follow the polar bears and
8 survive by scavenging throughout the winter. This
9 relatively little known aspect of polar bear ecology
10 is probably highly significant to the white fox
11 trapping industry of the Western Arctic, so that any-
12 thing that detrimentally affected the distribution and
13 the abundance of polar bears and seals could have a
14 significant effect on the land-based trapping economy
15 as well.

16 It may be helpful here to
17 summarize the life history of the polar bear.

18 The polar bear is circumpolar
19 in distribution. In Canada its range extends from the
20 permanent pack ice of the Arctic Ocean and high Arctic
21 Islands to Southern James Bay.

22 Although any polar bear may
23 dig a den and use it for a few days during a winter
24 storm, only pregnant females regularly den for an
25 extended period, usually from about November to late
26 March or April.

27 The maternity dens are often
28 dug in deep snowdrifts on steep slopes, river banks,
29 or stream banks located near the sea. Some maternal
30 denning takes place on the drifting pack ice of the

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 Beaufort Sea, but the extent to which this occurs is
2 not known.

3 Polar bears, like several
4 other mammal groups, have delayed implantation. This
5 means that the fertilized egg does not begin to grow
6 immediately but remains in the uterus in a dormant
7 state. Thus, although the polar bear mates in May, the
8 fertilized egg does not implant and begin to grow until
9 about September.

10 In captivity, the young,
11 normally two, are born anywhere from late November to
12 January. In the wild there is likely as much or more
13 variation in birth dates because of latitudinal
14 variances in Arctic seasons. Baby polar bears are
15 hairless, blind, and weigh only about $1\frac{1}{2}$ pounds at
16 birth. By the time they leave their den in March or
17 April, the cubs weigh approximately 20 pounds. The
18 females lose weight while suckling the cubs and are
19 hungry when they leave the den. Most young polar
20 bears stay with their mothers until they are $2\frac{1}{2}$ years
21 old, although some may remain with the female into
22 their third or fourth year.

23 Once back onto the sea ice,
24 the diet of polar bears consists mainly of ringed and
25 bearded seals. However, observations have been made
26 of polar bears catching sea birds by diving and
27 coming up underneath them, and of polar bears diving
28 for and eating kelp. Seals are mainly captured by
29 stalking, waiting for the animal to surface at a
30 breathing hole, or in the spring, digging out seal pups

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 and sometimes adults from the birth lairs beneath the
2 snow. Few seals captured are wholly eaten by the
3 bears that caught them.

4 When full-grown, adult males
5 bears in Canada weigh about 1,000 to 2,000 pounds,
6 while adult females weigh from about 400 to 600
7 pounds. At one time the theory was that the world
8 population of polar bears was a unit and individuals
9 lived in a nomadic existence wandering about the whole
10 circumpolar range. However, recent tagging and re-
11 capture programs, particularly in Canada, Norway and
12 Alaska, has shown that this is not the case. Instead
13 it appears that most populations are fairly local.
14 In Canada, there may be as many as 15 relatively
15 discreet sub-populations.

16 From October, 1970 through
17 July 1975, 429 polar bears were tagged in the Western
18 Arctic. Subsequent to tagging, 25 polar bears were
19 shot and 51 were recaptured. An additional 117 re-
20 sightings were made of tagged polar bears with numbers
21 painted on them up to two months after tagging. Seven
22 bears originally tagged in Alaska have been recaptured
23 in Canada. The most eastern record of an Alaskan tagged
24 polar bear was at Baillie Island. On the basis of our
25 mark and recapture data, a number of conclusions may be
26 drawn. For management purposes, the polar bear of the
27 Western Arctic may be regarded as one population.
28 Polar bears tagged within the study area show a high
29 degree of fidelity to that area. Furthermore, in
30 subsequent years they often return to feed in areas

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 close to where they were originally captured, despite
2 the fact that they may have moved several hundred
3 kilometers between years. Within the population there
4 is a tendency for a less exchange between the mainland
5 coast and the west coast of Banks Island than there
6 is between either of those areas and Amundsen Gulf.

7 The exchange of polar bears
8 between Alaska and Canada appears to be limited,
9 although it may vary with changes in environmental con-
10 ditions. For example, seven of the eight polar bears
11 recaptured outside the study area in the Western
12 Arctic were caught in 1975. Lentfer reported a
13 similar degree of discreteness between the polar
14 bear population in the Barrow area and that off the
15 west coast of Alaska.

16 The polar bears in the Western
17 Arctic have a fairly well-defined pattern of seasonal
18 movements from freezeup in the fall to breakup in
19 the late spring. No, a punctuation mistake.

20 The polar bears in the
21 Western Arctic have a fairly well-defined pattern of
22 seasonal movements. From freezeup in the fall to
23 breakup in the late spring, polar bears are distri-
24 buted throughout the south-eastern Beaufort Sea and
25 Amundsen Gulf. I might add the comment that, like
26 Dr. Smith, I regard this as one system.

27 As breakup proceeds through
28 the late spring and early summer, the annual ice
29 disappears from the mainland coast and Amundsen Gulf,
30 and the southern edge of the permanent pack ice

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 retreats to the north. Most bears apparently migrate
2 north to stay with the ice, although they may move back
3 and forth within a local area for as long as the ice
4 remains intact. Presumably they do this so as to
5 be able to continue to hunt seals, since they are
6 unable to capture seals in the open water, and seals
7 very rarely haul out on land. Occasionally some
8 bears spend the summer on land such as the south end
9 of Banks Island, probably by accident rather than by
10 design.

11 In years such as 1974 when
12 breakup was much more limited and a large proportion
13 of the ice did not move north, sightings of bears
14 off the mainland coast and Baillie Island were
15 common during the summer, suggesting that the north-
16 ward migration in summer is more facultative than
17 obligative.-- obligatory.

18 During October or November,
19 depending on when freezeup takes place, the bears
20 immediately migrate south. This movement was first
21 documented by Stefansson but movements of large numbers
22 of bears south along the west coast of Banks Island
23 have been well-known to the Inuit of that region for
24 many years. Presumably the stimulus for this move-
25 ment is to reach areas where there are either more
26 seals or better hunting conditions, or both.

27 Lentfer reported that in
28 Alaska, polar bears are much more abundant during years
29 in which a large amount of the permanent pack ice is
30 blown south to the mainland coast than when it is

Percy, Grainger, Barry, Sergeant
 Smith, Stein, Stirling
 In Chief

1 sparse. Similarly, at Herschel Island in 1970 and 1975
 2 when heavy pack ice moved south in early October and
 3 remained there, numerous polar bear sightings were
 4 reported.

5 Alternately, however, should
 6 the ice suddenly be blown offshore from the mainland
 7 by south-east winds after freezeup, the polar bears
 8 move back out with it rather than remain on the coast.

9 Polar bears are not distri-
 10 buted evenly throughout the ice-covered surface of
 11 the sea, but are clumped on specific ice types, pre-
 12 sumably in relation to the abundance and availability
 13 of seals. For the purpose of this discussion, the
 14 sea ice between the late fall and late spring, may be
 15 divided into a series of broad habitat types in terms
 16 of its usage by polar bears as follows:

- 17 (1) Stable flat ice areas interspersed with presure
 18 ridges that have not moved for a long time;
 19 drifted and suitable for seal lairs, as in one
 20 of the slides that I showed you;
- 21 (2) Is the same but without suitable drifts for
 22 seal lair construction;
- 23 (3) The floe edge, like that big wide open lead
 24 that I showed you in one of the early slides,
 25 where the leads are wide (a kilometer or more)
 26 usually with small open or refrozen leads
 27 parallel to the floe edge or emanating from it,
 28 some pressure ridges, occasionally fresh but
 29 usually not heavily drifted;
- 30 (4) Areas of 9/10 or 10/10 ice cover but in 'active

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 zones' such as around Baillie Island, where wind
2 and sea currents cause much movement of ice,
3 followed by refreezing, creating intermittent
4 lanes or patches of refrozen young ice, bare
5 or only slightly drifted;

- 6 (5) Areas of continuous heavy pressure ice that
7 have not moved for a long time, relatively
8 uncommon though were present in extensive
9 areas in 1974.

10 Type 4, the active ice
11 habitat, was the most important and 47% (181/385)
12 of our sightings were made there.

13 Type 3, the floe edge was
14 the next most important area with 40% of the sightings.

15 The number of sightings re-
16 corded from habitat types 1, 2 and 5 may be
17 biased to the low side because almost all bears have
18 to be located by tracking, and conditions are often
19 very difficult. Nevertheless, of the latter three
20 types, only type 1 with birth lair habitat for
21 ringed seals, attracts a significant proportion of
22 the polar bears.

23 Ringed and bearded seals
24 are concentrated along the last open leads prior to
25 freezeup. At freezeup they maintain their own breath-
26 ing holes in refrozen leads on pressure ridges by
27 abrading the ice with their heavy claws of their fore-
28 flippers. Drifting snow covers the breathing holes
29 providing a degree of protection from predators.
30 In stable ice areas, such as type 1 habitat, where

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 drifts become deep enough, the pregnant female ringed
2 seals scoop out subnivean birth lairs in which to
3 give birth to their single pups. Ringed and bearded
4 seals also concentrate in areas where the combination
5 of currents and winds periodically form patches of
6 open water, because of easy access to the air, and sub-
7 sequently along those areas when they refreeze (Type
8 4 habitat). It appears from aerial survey data that
9 the distribution of ringed and bearded seals is more
10 influenced by the distribution of leads than by water
11 depth. Now I'll qualify that to say that that applies
12 to the area of the south-eastern Beaufort Sea. We
13 haven't done a similar analysis of Amundsen Gulf.

14 Recent study areas -- recent
15 studies of the behaviour of wild polar bears have shown
16 that the most common method of hunting seals is to wait
17 beside an open, or snow-covered breathing hole and
18 wait for the seal to surface to breathe. This is
19 especially true during cold or windy weather when few
20 seals haul out on ice. Thus it is obvious that seals
21 are more accessible to bears through their relatively
22 exposed breathing holes or refrozen leads than they
23 are under heavy snow drifts or under pressure
24 ridges. Similarly, we suspect that the most beneficial
25 aspect of the floe edge to^a polar bear is hunting along
26 the narrow band of small open and refrozen leads that
27 emanate from the edge of the floe itself.

28 MR. BAYLY: Slow down a little
29 bit. The reporters are having a bit of a time keeping
30 up with you.

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In C hief

A Oh sure, O.K.

The importance of the habitat types 3 and 4 is clear from the above discussion. The value of those habitat types is greatly magnified by the fact that they are relatively limited in distribution and they overlies a large proportion of the offshore acreage currently under lease for present or future offshore exploration and potential production. Furthermore, it is clear that industrial activity anywhere in the type 3 or 4 habitat areas has a potential influence on a large proportion of the entire population of polar bears in the eastern Beaufort Sea and Amundsen Gulf, not simply those present in the immediate vicinity at the time. In addition, it is clear that industrial activity offshore from the mainland coast could influence part of the polar bear population shared between Canada and Alaska.

In 1972 and 1973 conditions were good for seals everywhere in the study area, so that the polar bear population was widely dispersed.

1974 was one of the heaviest ice years on record. During the winter of 1973-74 the winds consistently came from the north-west, resulting in heavy compaction of the ice throughout the study area. Through that winter there were few or no open periods during which there were areas of open and freshly refrozen leads. As a result, a large proportion of the seals present probably had breathing holes that were not nearly as accessible to polar bears as they are on refrozen leads. In

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
in Chief

1 addition, there was a relatively low snowfall so that
2 the extensive snow drifts in which seals make their
3 lairs did not form. The result of this lowered
4 accessibility to seals through the whole study area
5 meant that bears had to travel extensively in search
6 of seals, because there were few areas in which the
7 bears could concentrate their efforts. Whenever such
8 local areas existed, such as in the vicinity of
9 Baillie Island, there were great concentrations of
10 bears. However, to generalize, the pattern was one of
11 more extensive travelling in search of local areas of
12 greater seal abundance and accessibility.

13 In 1975 there was an interest-
14 ing variation on the ice conditions that prevailed in
15 1974. The ice in Amundsen Gulf was again relatively
16 unproductive for seals, but the offshore leads along
17 the mainland and Banks Island coast opened and refroze
18 periodically, providing good hunting conditions.
19 The numbers of seals appeared to be low everywhere,
20 which made the areas in which they were concentrated
21 and accessible to polar bears even more important.
22 It is clear that a marked reduction in both numbers and
23 productivity of ringed seals has taken place in the
24 Eastern Beaufort Sea and Amundsen Gulf. We have no
25 baseline data from earlier years but the numbers of
26 ringed and bearded seals that were counted in 1975 were
27 about half the numbers that were counted the year
28 before. However, no one yet knows how to reliably
29 relate the numbers of seals on the ice to the total
30 number present.

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 It is not clear which factors
2 caused these changes but some points should be con-
3 sidered. In 1974 and 1975, there was less snow cover
4 than in 1972 or 1973 in which the seals could construct
5 their subnivean birth lairs during the late winter
6 and early spring. Also, in 1974 the winter winds
7 blew predominantly from the north-west instead of
8 alternating between the south-east and north-west.
9 Consequently, instead of the usual series of leads
10 which open and refreeze parallel to the mainland coast
11 and the west coast of Banks Island, the ice was heavily
12 compacted and frozen solid against the land and for
13 many miles offshore. Thus it was probably much more
14 difficult for the large numbers of sub-adult seals that
15 normally concentrate along those lead systems to
16 maintain their breathing holes during the winter.
17 We do not know for certain if seals can still maintain
18 their breathing holes adequately under those conditions,
19 if a large proportion cannot and thus die, or if there
20 are large-scale movements of a substantial proportion
21 of the population. However, the Inuit for many years
22 have recorded movements of large numbers of sub-adult
23 seals from east to west along the coast during the
24 fall. Many of these seals probably return from west
25 to east in the spring by moving along the open leads
26 offshore and parallel to the coast. If this is so,
27 it makes that lead system a very important migration
28 route. Nor do we know if such ice conditions have
29 any adverse effect on the prey species of these seals.
30 We do know that the numbers of seals present in the

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 Eastern Beaufort Sea and Amundsen Gulf dropped markedly.
2 Smith and Geraci also demonstrated that the ringed
3 seals were in a much poorer nutritional condition in
4 1975 than in 1974 -- or sorry, much poorer nutritional
5 condition in 1974. That was compared to earlier
6 times, I believe he has elaborated on that. Because
7 of the extent of change in numbers, it is particularly
8 unfortunate that we don't have comparable survey data
9 from this area for 1972 or 1973 when conditions appeared
10 to be more suitable.

11 It is clear that in years
12 such as 1975, when polar bears are more dependent on
13 a limited area for feeding, they are even more vulnerable
14 to detrimental influences on their habitat or
15 the prey species they depend on for their existence.
16 No one knows what the actual effects of oil on polar
17 bears would be. Polar bears swim often and hunt seals
18 at breathing holes by putting their head in the water
19 while trying to bite them. It is unknown what the
20 effect would be of oil on a bear's eyes or of thermoregulatory
21 abilities of the coat if fouled by oil.
22 It is not known whether or not bears would avoid
23 oiled areas.

24 Most maternity denning in
25 the Western Arctic occurs along the coastal areas of
26 Banks Island and Western Victoria Island. Apparently
27 maternity denning of polar bears along the mainland
28 coast occurs infrequently, since only three dens
29 have been reported by Inuit hunters in the last ten
30 years and only one was found during this study. Some

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

dens have been located along the Alaskan coast but the total is insignificant when compared to the large size of the population of polar bears on the sea ice north of Alaska. Although maternity denning has been confirmed in the multi-year pack ice of the Beaufort Sea, as yet there is no further information on the extent to which this occurs.

Estimations of population size are difficult to make, mainly because of the problems of sampling representatively and small sample sizes. The problems in the Western Arctic are aggravated by the fact that the population appears to have declined sharply in the last two years. However, even with the data available, it is clear that the population of polar bears probably does not exceed 1,500, and at present it could be as low as 1,000.

I would like to make a few brief comments on the concept of critical areas. In the simplest of terms, the survival of any species is dependent on its ability to feed and reproduce successfully. Thus, the most important aspect of the conservation and management of a species is the protection of the most important areas of feeding and breeding habitat. If that condition is met, a population can recover in time from a large-scale reduction in numbers, be it caused by accident or by design. Attempts to preserve, in this instance, the maximum number of individual polar bears would be of little value if the key feeding and denning areas were destroyed. Therefore, I've restricted my comments to

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 these two key aspects.

2 The most important area for
3 polar bears and seals in the Western Arctic is the
4 shear zone or area of moving leads that parallels
5 the mainland coast and the west coast of Banks Island.
6 Because seals are more concentrated there, or simply
7 more accessible to the bears, or both, that area is
8 critical to the maintenance of a viable polar bear
9 population in the Western Arctic, especially in years
10 such as 1974 and 1975 when seal numbers and productiv-
11 ity in the fast ice areas were low. During the open
12 water period, the polar bears are absent in the more
13 northerly areas, so that industrial activities --
14 that should be southerly --

15 During the open water period
16 the polar bears are absent in the more southerly
17 areas, so that industrial activities which took place
18 then would have no effect on the bears provided there
19 were no detrimental effects on the seal stocks.

20 Unpublished behavioural data
21 suggest that polar bear hunting efficiency is lower
22 in the summer when the ice is perforated with melt
23 pools, leads and large areas of open water, because
24 the seals have an almost unlimited number of alternate
25 holes in the ice in which they can breathe, and in
26 many of these they are simply not vulnerable to
27 predation. Thus, less caloric benefit is gained per
28 unit of energy expended during hunting activities
29 between breakup and freezeup, and hunting success is
30 more variable. The speed with which the southern

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 migration of the polar bears in the Western Arctic
2 occurs after freezeup illustrates their dependence on
3 the winter and spring feeding areas.

4 Denning areas are only used
5 by pregnant female polar bears between about late
6 October and mid-April. Most dens are located within
7 five to ten miles of the coastline. Because of the
8 altricial nature of polar bear cubs at birth, it seems
9 likely that the disruption of dens prior to the time
10 that they would normally be deserted would result in
11 a high degree of mortality of new-born cubs.

12 MR. BAYLY: Q Dr. Stirling,
13 before we go any further, would you explain the
14 term "altricial"?

15 A Oh, certainly. Altricial
16 means very primitive or poorly developed at birth, so
17 that it's in a state of relative helplessness. As I
18 said before the cubs are born, they're hairless and
19 blind and they're only a pound and a half, totally
20 helpless. An example of a fairly advanced or the
21 opposite word is "precocial" species, would be some-
22 thing like the harp seal which is capable of being
23 weaned and completely independent in 10 to 12 days.

24 Q Thank you.

25 A With respect to recom-
26 mendations related to industrial activities, I would
27 make two comments:

28 (a) With respect to the key feeding areas, the obvious
29 recommendation would be ideally, no industrial activity
30 between about mid-October and mid-May, or at best to

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In C hief

1 keep it at a minimal level at highly specific sites.
2 Areas in which Inuit hunting occurs should be avoided
3 during the period in which the sea is frozen. It is
4 not yet clear what the reaction of both the polar bears
5 and the seals would be to extensive industrial
6 activity, and aircraft noise; but until we know more
7 about this aspect a circumspect approach seems ad-
8 visable.

9 (b) With respect to denning areas, surface activities
10 such as seismic operations should not be permitted,
11 certainly within five miles, and preferably not within
12 ten miles of the coastline of Banks Island between
13 the 1st of October and the 30th of April.

14 In terms of research
15 recommendations, I think that some monitoring of both
16 polar bear and seal populations is essential, espec-
17 ially during the initial stages of exploration.

18 An in-depth study should be
19 conducted on the effect of man, machines, and indus-
20 trial activity on polar bear behaviour and distribu-
21 tion. Nothing is known on this subject. This research
22 should encompass a variety of areas such as the
23 Western Arctic, the High Arctic, and Western Hudson
24 Bay. The purpose would be to obtain quantitative
25 measures of the importance of disturbance, the degree
26 to which acclimation occurs -- "acclimation" means
27 the degree to which animals get used to things --
28 and the forms of deterrents that might be available.
29 Equally important would be a discussion of what
30 attracts bears in the first place. The benefits would

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 apply to human activities throughout the Arctic, but
2 would be especially valuable to offshore activities
3 in ice-covered waters such as the Beaufort Sea. The
4 problems of man-bear conflicts and how to minimize
5 them would be included here. No single method or
6 activity is known to be completely successful in
7 deterring bears. However, some things are helpful
8 such as keeping camps clean of attractant odors such as
9 garbage, having dogs outside for warning, and the
10 use of explosive-scaring devices. Electric fences
11 have been used fairly successfully on grizzly bears
12 to keep them out of garbage dumps in Yellowstone Park.

13 A mammal which is of great
14 economic importance to the Inuit of the Western Arctic
15 but has received little consideration to date in
16 relation to the sea ice habitat is the Arctic fox.
17 Dr. Smith and I summarized some of the interspecific
18 relationships of mammals in the pack ice ecosystem.
19 We specifically noted the value of carrion left from
20 seals by polar bears to the maintenance of large
21 numbers of Arctic foxes in the Western Arctic. It
22 would be of great value to undertake an in-depth
23 baseline study of the population dynamics of the Arctic
24 fox in this region, and assess the relative importance
25 of its different food sources in different seasons
26 and years. The benefit of such a study would be
27 to determine the importance of the sea ice habitat
28 to the Arctic fox population, and consequently to the
29 fur-based economy of the region. This would provide
30 further understanding of possible detrimental effects,
natural or otherwise, on the wildlife component of the

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 total economic base of the Inuit of this area.

2 To date there is only a limi-
3 ted amount of baseline data on heavy metal and P.C.B.,
4 whic h stands for polychlorinated biphenyl, which is
5 a chemical, contamination from polar bears and seals
6 in the Western Arctic. Because these animals are at
7 the top of the food chain, they can serve as indicat-
8 ors of the degree of contamination present in the
9 ecosystem. Therefore it would be valuable to collect
10 more specimens to establish a firm baseline on the
11 present contamination level against which change, if
12 it occurred, could be measured. This is also impor-
13 tant in a human context because the Government of the
14 Northwest Territories is encouraging a program of
15 having people move back to the land, and while there,
16 utilize natural foods such as caribou and seal. In
17 the case of seals, dangerously high levels of
18 mercury contamination have already been reported in
19 some locations.

20 THE COMMISSIONER: Dr.
21 Stirling, just going back to page 18, the last
22 paragraph, I want to make sure I've got this right.

23 "To date there is only a limited amount of
24 baseline data on heavy metal and P.C.B.
25 contamination from polar bears and seals,"
26 or "of polar bears and seals"?

27 A I guess that should
28 be "of".

29 Q Emanating from elements
30 -- lower elements in the food chain?

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
In Chief

1 A Yes. These sorts of
2 things traditionally go into the water, they are
3 absorbed by micro-organisms and eaten by ever-larger
4 organisms, and the polar bear and the seal being at
5 the top of the food chain, tend to concentrate these
6 things as they go up.

7 Q Yes.

8 A So that in one sense
9 those two species, the monitoring -- and additional
10 benefit of monitoring such concentrations is that
11 they can act as an indicator of the health of the
12 whole ecosystem in terms of concentrations of
13 chemicals, which might be much more difficult to
14 measure at lower levels.

15 MR. BAYLY: The panel is now
16 available for cross-examination, Mr. Commissioner.

17 THE COMMISSIONER: Well, we
18 might as well have a few questions. Mr. Carter?

19 MR. CARTER: Sir, I'd like
20 to reserve the right to cross-examine this panel.
21 Some of the evidence was only received this week, and
22 the rest of it last week. Mr. Marshall is coming up
23 tonight and hopefully he's had some time to prepare
24 cross-examination on those portions that were rele-
25 vant. I might have a couple of questions that I
26 could ask after lunch, but I'm not prepared to do so
27 now.

28 THE COMMISSIONER: Mr.
29 Hollingworth?

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

CROSS-EXAMINATION BY MR. HOLLINGWORTH:

Q Mr. Stein, I'd like to refer you to page 2 of your testimony, of a discussion of a fish migration by anadromous fish from late July to November, and I was wondering if you know or whether it is known generally what the concentration of spawning areas is for inconnu and Arctic cisco?

WITNESS STEIN: I don't quite get the meaning of "concentration".

Q I mean the geographic concentration.

A Pardon me?

Q I mean the geographic concentration.

A We got into this, I think, at a session in Yellowknife. As it stands right now we really do not have good information on the location of spawning areas for either one of these two species. In the case of inconnu, and I think probably for Arctic cisco as well, we do not suspect any spawning areas within the delta region itself. We think that the areas that are being used are probably the larger tributaries of the Mackenzie, including the Arctic Red River, the Peel, in case of inconnu, I believe the Malcolm has been indicated as a potential spawning area. The inconnu run considerable distances up the Mackenzie.

Q But you have no indication of major spawning areas in the delta or any spawning areas.

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

1 A Not for those two
2 species in the delta, no.

3 Q What about for broad
4 whitefish and humpback whitefish?

5 A For the two species of
6 whitefish we have two locations that we suspect are
7 spawning areas. The one is -- well, actually it's
8 slightly out of the area of the delta itself, it's
9 the mouth of the Arctic Red River; and the second
10 one is an area called Horseshoe Bend, which if you
11 were to draw a line roughly from Aklavik to Inuvik
12 it would be where that line crosses the middle
13 channel.

14 Q What about on the Peel
15 River, is there any evidence of spawning areas there?

16 A Not that we have been
17 able to identify, no. As I say, we have information
18 that indicates that some of the tributaries of the
19 Peel itself are being used, but we have not been
20 successful in ground-proving the specific locations.

21 Q And is there any evi-
22 dence of locations of spawning areas by whitefish
23 in the back eddies of the Mackenzie?

24 A We feel that this is
25 probably the case, yes. The back eddies of the Mac-
26 kenzie and of the delta itself, these would be larger
27 areas of slower water but again, as I say, when you're
28 dealing with water that is so heavily silted it's of
29 course impossible to make any visual observations
30 and you're faced with the situation of hopefully

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

1 getting concentrations of fish, that is, but also
2 concentrations of fish that are in both a post and
3 pre-spawning condition. Really the only thing that
4 we have been able to use to identify, but we suspect,
5 yes, that the back eddies are being used by whitefish,
6 especially.

7 Q So this again would be
8 one of the areas of study that you're recommending?

9 A Yes, I think that would
10 be one that definitely needs further work.

11 Q On page 9 you make
12 reference to the use of Shallow Bay, and do I under-
13 stand you to be saying there that no fish populations
14 are found in Shallow Bay with the exceptions that
15 you've named at any time of the year? That's at the
16 top of the page.

17 A No, I won't say at any
18 time of the year, and I think as it reads there, we have
19 stated that "no large fish populations are found in
20 Shallow Bay." There certainly will be fish in the area,
21 yes, and especially during migration periods; but for
22 the most part our data and I think the information that
23 Dr. McCart's group have put together, they both
24 indicate that the majority of these in Shallow Bay
25 does not appear to be critical fish habitat at any
26 time of the year, and this would be especially true
27 in the winter when much of it is frozen.

28 Q Were your studies
29 conducted throughout the year in Shallow Bay?

30 A Well, the concentration
of course, would be during the summer in the open

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

1 water period, but I think that there was a station or
2 two located there in the winter as well.

3 Q And what about by
4 Dr. McCart, do you have any information on his
5 study?

6 A I'm referring here to
7 a report by G.J. Mann of Aquatic Environments entitled:
8 "Winter Fisheries Survey Across the Mackenzie
9 Delta,"

10 dated June , 1975. On the map of sampling
11 locations they have shown three sites that were
12 sampled at the crossing location itself across Shallow
13 Bay. In the abstract they have a statement here that
14 I might read:

15 "In general, lakes and small channels are
16 more extensively utilized for over-wintering
17 than are the larger channels in East
18 Langley Reindeer and west. A large portion
19 of Shallow Bay appears unsuitable for over-
20 wintering of fish."

21 They say, I think, that the results from our
22 Beaufort Sea and the pipeline study would pretty
23 well substantiate that.

24 Q Is there any evidence
25 of spawning by fish in the fall in Holmes Creek?

26 A The work that we have
27 done on Holmes Creek has been primarily to monitor
28 the commercial fishery that has been in the past
29 operating at Holmes Creek. To the best of my
30 recollection I think fish that were utilizing the

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

1 creek itself, included grayling, suckers and white-
2 fish and possibly inconnu, and we do suspect that yes,
3 they are, at least, there is the potential of spawning
4 in this particular stream. This is for some species,
5 especially Arctic grayling, and this would be the
6 case for many of the smaller tributaries which are
7 coming in out of the Caribou Hills and the Richardson
8 Mountains both.

9 Q And what times of year
10 would the spawning you suspect occur?

11 A Well, in the case of
12 grayling it would be during the spring. The remaining
13 of the species would be, with the exception of suckers,
14 would be during the fall, probably the period September
15 -October.

16 Can I go back just briefly
17 to your question concerning Shallow Bay?

18 Q Certainly.

19 A As I mentioned, I'm
20 sure fish are utilizing the bay itself, but not in
21 substantial numbers. The western portion of the
22 delta is, of course, a migration route for pretty
23 well all of the species, as I recall that we have
24 located, and perhaps more importantly for inconnu
25 and of course Arctic char. Now the data that we
26 have indicates that probably the most significant
27 routes would be through the Peel, Moose, and West
28 Channels. I suspect that yes indeed, there will
29 also be fish using Shallow Bay going into the farther
30 reaches. The numbers we don't really have a feel for,

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

1 but the point that I wanted to make of course, was
2 that there still has to be access into these other
3 channels so that the more northerly portions, say, of
4 the bay would probably be the -- serve as a fairly
5 significant migration route until at least they gain
6 access into these other channels.

7 Q Over what period of
8 the year would migration be taking place in that
9 area, Mr. Stein?

10 A It appears that in
11 some cases it could start as early as mid-July, as
12 I indicated. All the species, I think, that would
13 be utilizing the area are fall spawners and the
14 bulk of the migration would be taking place probably
15 in the mid to late-August and early-September period.
16 This would especially be the case with Arctic char
17 as well. There is, of course, a downstream migra-
18 tion, post-spawning migration which would be
19 occurring oh, late-October, early-November.

20 Q So it's fair to say
21 that there would be migration going on during
22 substantially all the period that there's open water
23 in Shallow Bay?

24 A It comes close to that,
25 yes; but again I say the numbers are the unknown
26 factor here.

27 Q Now in view of your
28 suspicions, at least, that there is spawning going
29 on in the Holmes Creek area, and in view of the
30 fact that that is an area of projected activity

REPORTING LINE
MAY 14 2 1944

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

1 by the pipeline
2 applicants, what recommendations would you have
3 for accommodating these two activities, if possible?

4 A I wonder if you could
5 elaborate on that slightly? As I recall it, the route
6 change -- I'd have to go back to a map -- but I
7 think that would probably take it out of the area
8 as far as the pipeline is concerned at Holmes Creek.
9 Is that --

10 Q Well, I'd have to go
11 back and check but I understood there was a crossing
12 of Holmes Creek further upstream still.

13 THE COMMISSIONER: It's my
14 impression, but maybe we're mixing up a gas plant
15 or something in there.

16 MR. HOLLINGWORTH:
17 Perhaps I could check
18 on that over the lunch period and come back with
19 it, Mr. Commissioner.

20 MR. GOUDGE: I wonder
21 if we might break at this point? It's 12:30.

22 THE COMMISSIONER: Right.
23 Good idea. Two o'clock.

24 (PROCEEDINGS ADJOURNED AT 12:35 P.M.)
25
26
27
28
29
30

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

(PROCEEDINGS RESUMED AT 2:10 P.M.)

THE COMMISSIONER: We'll come
to order ladies and gentlemen. Mr. Hollingworth I think
you were cross- examining.

MR HOLLINGWORTH: Thank you sir.
Mr. Stein, before the lunch break we were discussing the
situation at Holmes Creek and I've done some checking
and found that a possible alignment of the Foothills
route at least calls for a crossing of Holmes Creek
about 10 miles upstream, from the mouth of Holmes Creek,
and in view of your testimony before lunch perhaps you
might advise what mitigative measures you would recommend
in that sort of situation.

WITNESS STEIN: Well, ideally
what we would do is just not cross it, but to -- I'm
not totally aware of specific information out of Holmes
Creek, but I think that obviously what would be needed
would be information on spawning areas , critical
habitat areas, followed by alignment changes if needed
to avoid these areas. Secondly, I think that I would
look at it from the point of timing. If it was an open
water, or the crossing was timed with open water it
should certainly be done in such a manner to avoid a
conflict with any sort of migrations that are coming
into the stream. If it was a winter crossing then the
important thing to my way of thinking would be whether
there is, or is not, flowing water in the creek at the
crossing point, and I'm not aware of what the winter
conditions are or whether that stream in particular
freezes to the bottom. If there is any likelihood of

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

1 jeopardizing the habitat areas downstream, in the event
2 that there is flowing water then I would certainly like
3 to see some sort of sediment control measures built into
4 the crossing technique.

5 Q If you were to assume a
6 staging point on one side of Holmes Creek, and not
7 necessarily right hard by it, but on one side of it, and
8 the right of way on the other, and again not necessarily
9 hard by it but on the other side, and some sort of ice
10 bridge was contemplated across Holmes Creek, near the
11 mouth. Have you any particular reaction one way or
12 another to that?

13 A The mouth of Holmes Creek
14 is going to be critical we think, no matter what sort
15 of operation is contemplated. The commercial fishery
16 which is been operating in the area for a period of
17 years has its, at least it was when I was there--
18 has its facilities established right on the mouth. Now
19 I have also heard, and I don't know if it's fact or not
20 that the fishery itself in the future, may indeed be
21 moving away from that site.

22 Whatever, as far as I'm con-
23 cerned I think that any sort of a staging area or the
24 right-of-way, wharf sites, whatever, should stay as far
25 away from the mouth of the stream as physically possible.

26 Q On page ten, Mr. Stein
27 you make reference-- this is of your evidence-- you
28 make reference to a report which is not yet available.
29 Whose report is that? That's the beginning of the
30 first complete paragraph there.

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

1 A I don't know of a specific
2 report -- you're referring now to the first sentence.
3 Is that correct ?

4 Q Yes

5 A I don't know of a specific
6 report but it is my understanding that these aspects
7 were being considered under the Beaufort Sea Study. Now
8 I know John Percy, of course has been working with inver-
9 tebrates. I don't know if maybe John will have a re-
10 mark on this. I don't know if indeed it included
11 any baseline hydrocarbon information.

12 Q Dr. Percy?

13 WITNESS PERCY: There was a
14 group from Victoria under Dr. C.F. Wong who's been
15 primarily looking at hydrocarbons in tissues and in
16 sea water samples. I'm not quite sure of the number of
17 the report but it is one of the Beaufort Sea Reports.

18 Q That indicates then, that
19 a report has been prepared but it's not yet generally
20 available ?

21 A It has been-- as far as I
22 know it has been prepared Perhaps Dr. Millen : could give
23 you a better idea on that.

24 Q Possibly Dr. Millen could
25 advise me through Mr. Bayly .

26
27 MR BAYLY: He'll be giving
28 evidence here perhaps before the end of the week and I'd
29 be quite happy if Mr. Hollingworth wanted to speak to
30 him formally before that or if he wanted to incorporate
that into his cross-examination.

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth

MR HOLLINGWORTH: Mr.

Commissioner, I have some trouble with Dr. Barry's evidence. When I arrived here Monday evening, it was in my cubbyhole at the hotel and I read it over and reported to my principals in Calgary that it had been filed. They're very anxious to see it and I'm not in a position to know yet whether I have any cross-examination arising out of that, so I would like to reserve that possibility.

THE COMMISSIONER: Well, that presents no difficulty does it-- Dr. Barry could be recalled if necessary at Yellowknife, I take it.

MR HOLLINGWORTH: Very good sir, and I'll certainly try to have that information in the hands of my principals as soon as possible, hopefully when Dr. Barry's still here, but I just don't know what the mail's going to be like.

THE COMMISSIONER: Well, Dr. Barry, having a legal background, I think he enjoys testifying.

MR. HOLLINGWORTH: I thought he got out of the legal profession by choice.

Q Dr. Percy, reading your testimony on inverts and oil pollution, it seemed to be of a reasonably general nature and I take it that you agree with me that there are certain elements in crude oil which are the detrimental effects. They have them-- the detrimental affects on the-- on life in general in stream vents.

WITNESS PERCY: Part of the

1 problem I think is that there are a wide range of
2 detrimental effects and we're not at present aware of
3 all of them. We certainly-- some of the more volatile
4 ones are what cause the very rapid lethality, but there
5 are a lot of other effects that are caused by other
6 components of the oil, but we have relatively little
7 information about the specific effects.

8 Q That's right. I understand
9 this is called the volatile fraction of the oil.

10 A Right.

11 Q And opposed to measures to
12 clean up oil slicks or oil spills or using dispersants
13 to disperse the oil, do you of any measures that are
14 being developed or directed towards just neutralizing
15 this volatile element ?

16 A Not specifically. In temp-
17 erate waters the volatile elements usually are lost
18 fairly rapidly so that within the time that it takes
19 to mobilize a clean up effort they are usually starting
20 to be lost quite rapidly, at that point. So that they're
21 not too much of a problem. The problem, as I see it in
22 the Beaufort Sea is that a lot of this material will be
23 trapped under the ice, presumably a lot of it would,
24 instead of being lost into the air would be dissolved
25 in the sea water instead.

26 Q That's another-- brings up
27 another point. I appreciate that oil trapped under the
28 ice may not lose its volatile fraction the way oil on
29 the surface of temperate waters would be, but what
30 about oil on the surface of Arctic waters ? What happens

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Hollingworth
Cross-Exam by Evans

1 there with the volatile fraction ?

2 A I can't -- I'm not an oil
3 chemist so I'm not absolutely certain but I would assume
4 that the loss of volatile fraction still occurs but at
5 a lower rate.

6 Q But this is a supposition
7 that you are making is it ?

8 A Yes I think it is-- I'm
9 pretty sure it is a temperature dependent effect.

10 MR.HOLLINGWORTH: O.K. those
11 are all the questions I have thank you.

12 MR.GOULDGE: Mr. Evans will
13 be next sir.

14 MR.EVANS: Thank you.

15 CROSS-EXAMINATION BY MR. EVANS:

16 Q I have a few questions to
17 address to Dr. Barry to start with. Dr. Barry, what
18 would be the environmental consequences of a massive
19 oil spill on the Beaufort Sea, one that might last for
20 say one year or even longer, and for all wildlife, but
21 particularly for your special area, birds ?

22 WITNESS BARRY: I think the
23 prolonged effect of a spill that would occur , I think
24 all these scenarios seem to assume that a blowout might
25 occur or a disastrous oil spill at a time when logistics
26 and travel and everything are the worst, mainly at
27 about or just before freeze up. I think it's been
28 described quite well, and I know it will be by Dr.
29 Millen, dispersal of oil as far as Point Barrow in one
30 direction and coastal areas. The---as I tried to point

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

1 out by those photographs I had, in the spring, migrat-
2 ing birds are attracted to open water and the first thing
3 that looks like open water, and a spill, even though it
4 were under the ice for the whole winter, it may crop up
5 in different places where there are weeds or thawing
6 starts.

7 I'm completely pessimistic
8 about any attempts to clean oiled birds , so therefore
9 any bird that should land in these areas, is, I consider
10 dead. From our surveys of following these ice leads
11 it's something we've been doing for a number of years.
12 That's the only place where these birds occur. It's a
13 transient population and places as I described off
14 Cape Dalhousie where we found as many as 75 - 100,000
15 eider ducks and old squaws move on to their nesting
16 areas in the rest of the Arctic Islands and further
17 eastward, and may be replaced the next day by another
18 large concentration.

19 In our surveys that we did
20 which were spaced out, I think it was every seven days
21 at the initial pre break-up period, there was this
22 continual turn over of birds in that-- in these various
23 ice leads. It's variable. We found that off Herschel
24 Island for instance where the water is extremely deep
25 relative to where the weeds always form, there were
26 fewer birds stopping there for feeding and resting than
27 would be off Cape Dalhousie where the water is shallower
28 and a lot of them I assume are feeding on the bottom,
29 and there was a concentration point there that was--
30 the other place that was continually concentrated was

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

1 off Cape Parry, another similiar situation. Probably
2 related very much to the depth of the water for birds
3 like eiders that feed on bottom, marine fauna, and
4 similiarly probably the richness of the water and
5 mixing of them-- you'd find off Cape Parry a similiar
6 situation.

7 Q Could this result in whole
8 colonies or species being wiped out ?

9 A I-- colonial nesting birds
10 of course are always very very critical situation be-
11 cause you can-- they are-- just by the nature of the
12 thing. The sea bird colony at Cape Parry, if a spill
13 ever got in there where it's a very small, very dis-
14 creet colony; I'd call it a migratory bird sanctuary,
15 but it's less than 200 acres, and only one of the
16 three points is actively used, so it's a very very
17 confined spot. A spill at the base of Cape Parry
18 cliffs, and I must say from other sources it is a very
19 critical area from the mere fact of a Dew Line fuel
20 cache is right at the base of that same point, unprotected
21 by the way. Note not dyked. That-- you could wipe
22 out that little colony very easily. By analogy our
23 freezing, or the 1964, the year that, as far as I'm
24 concerned was much worse than even 1974. There was no
25 open water, and there we estimated a hundred thousand
26 birds, or in other words, ten percent of the population
27 died of starvation. Now some birds did make it, got into
28 Victoria Island which is where most of the king eiders
29 are, and Banks Island and may have survived, by virtue
30 of migrating through this vast area of complete ice

cover. Ten percent of the population . Now that-- if they had the open water or an oil spill in which they all were stopping and moving on, it would probably be way way higher than ten percent. It might be extremely disastrous. Yes especially king eiders. Common eiders are colonial nesters. There again they are very susceptible but fortunately there's quite a few scattered colonies. The islands of Dolphin and Union Strait is quite a spot for common eiders. That's out of the general area that we're dealing with but that is a -- quite a concentration of common eiders there.

Q Dr. Millen recently made a prediction that there would be complete recovery from any oil spill that-- in the longest in ten years. What is your opinion of that statement ?

A Basically I think that it is probably accurate but there is an awful lot of ifs, ands, and buts about it. Lets assume a storm surge oil covering of Kendall Island migratory bird sanctuary or the-- in particular the area where the snow geese nest. If that were covered with a heavy oil and left as a residue after a storm surge went out is what I would assume happened from others that I have observed. In other words the whole area is-- would be covered and this happens fairly commonly. It's not a rarity, but the oil, of course floating on the surface as it withdraws would perhaps leave a residue on those nesting islands and they are barely two or three feet above the normal high tide line. That could and would, I'm pretty sure wipe off that particular snow goose colony. It's not the

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

1 largest one. It's very small compared to the Banks
2 Island snow goose colony but that could be wiped out
3 very readily as well as any other species that are
4 nesting in these particular spots.

5 A residue of oil that perhaps
6 would destroy the vegetation and I think some of the
7 botanists would probably be better qualified to answer
8 how long that effect would last, but it could wipe out
9 nesting success in that area for probably several years,
10 and once that happens it would probably take awhile to
11 recover.

12 Geese are long lived, most of
13 them-- very few of them die of old age, but most of them
14 you could expect a life span of 15 to 17 years.

15 Q Is it possible that some
16 of this damage would be permanent ?

17 A I think it would, depending
18 on destruction of the habitat. I'm trying to use just
19 this Kendall Island snow goose situation. If the veg-
20 etation were destroyed there by residues of various sorts,
21 it would-- and this oil completely saturated so nothing
22 would grow in it you'd have sort of a desert effect type
23 thing. They're horrible beasts in that they don't seem
24 to explore new areas very readily. There is a minimum
25 number that seems, a threshold number for-- that is
26 required for snow geese to actually begin a colony and
27 once they start one they don't move too much, so if
28 that particular area, were-- the vegetation and habitat
29 were destroyed, with it of course goes the snow goose
30 colony.

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

1 Q I wonder if any of the
2 other gentlemen on the panel would like to comment on
3 Dr. Millen's statement, from their particular areas of
4 expertise.

5 THE COMMISSIONER: Would you
6 repeat Dr. Millen's statement for my benefit ?

7 MR. EVANS:

8 Q Yes, I've drawn from his
9 statement that, in inference anyway, that all of the
10 damage resulting from an oil spill would disappear within
11 ten years and that there would be a complete recovery .
12 I believe Mr. Stein wanted to comment.

13 WITNESS STEIN: I think as
14 Dr. Barry started to point out there's so many variables
15 that really have to be considered. I don't envy Dr.
16 Millen the job of having to come up with any figure, let
17 alone ten years . From the fisheries point of view
18 though, it would be so dependent on the area involved
19 and of course the use made of it by the fish themselves.

20 THE COMMISSIONER: Well, you
21 said yesterday that it would depend on whether the oil
22 in large quantities reached the south shore of the
23 Beaufort Sea. That's the thrust of your testimony as
24 I recall.

25 A That's correct, but what I
26 was sort of getting at here I think is, are we talking
27 about a quarter of a mile for the coast or are we
28 talking ten miles?

29 THE COMMISSIONER: Right, it's
30 hard to answer this thing. I understand that.

A I think it is. The other

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

1 thing of course is going to be the availability of
2 other habitats in place of what has been lost. The
3 first reaction by the fish themselves I think is prob-
4 ably going to be one of avoidance and if there's any
5 other place for them to go, then in all likelihood they
6 will.

7 I think probably-- well there's
8 another thing here that I'd like to consider and that is
9 Dr. Millen, of course has been working on the basis that
10 it's going to be one year before any sort of a relief
11 well can be drilled. I immediately asked myself the
12 question of, let's assume that we end up with two bad
13 ice years in a row, and where we go from there. But
14 I think probably as far as the recover of the populations
15 themselves, probably ten years is a fairly good estimate,
16 considering worst case. Now as far as persistence of
17 some of the materials involved within the system them-
18 selves that may be another question, but as far as
19 bringing the original numbers back up I think it's
20 probably fairly close.

21 MR. EVANS:

22 Q Thank you. Is there any
23 body else who'd like to make any statement on that ?
24 If not then--

25 WITNESS SERGEANT: This isn't
26 really in my area of competence but I recollect in the
27 Buzzard Bay oil spill of rather volatile crude or
28 refined products. Refined products. There were still
29 invertebrate kills in the littoral, immediately sub-
30 littoral region near the beach going on for 5 years,
31 was it John ? If we assume then that's a 12 month

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

season of wave activity and if the open water season in some way in the Mackenzie is about half that, five or six months, is that a reasonable estimate ? It would seem reasonable to double the time from five or six years to about ten years for re-sorting of beach material containing oil.

MR. EVANS: Thank you.

THE COMMISSIONER: Where is Buzzard Bay ? I've forgotten.

A Massachusetts . It has been thoroughly studied by the biologists at the Woods Hole Oceanographic Institute.

MR. EVANS:

Q Dr. Barry , in your testimony you mentioned barrier beaches and offshore islands I believe. I wonder how important a part of the bird environment are these ?

WITNESS BARRY: I'm sorry I didn't hear you very well.

Q I'm sorry. In your testimony you discussed barrier beaches and the off shore islands I believe, and I wondered how important a part of the bird environment these were , and I guess after that, how susceptible they are to damage from oil pollution.

A I think everyone in this panel is agreed that the lagoons and the water areas behind the barrier beaches are extremely ^{important} for invertebrates and rearing of fish and it's a source of food for some of the higher species. The barrier beaches are-- and the lagoons behind them are a very- a prime moulting area, for quite a variety of diving ducks, scaups

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

1 scoters, old squaw. That one-- it's a variable thing.
2
3 Sometimes they use the barrier beaches in Alaska and
4 sometimes the ones over around Tuk Penninsula and so
5 on. We have numbers, estimates of as high as 600,000 birds
6 mostly old squaws and some eiders and scoters using
7 the barrier beaches for moulting. The birds are comp-
8 pletely helpless as I pointed out when they moult. They
9 are-- in other words are flightless. An oil spill in
10 there would just, as I mentioned before, any spill I
11 consider the bird dead; so any spill into an area like
12 that. McKinley Bay for instance, the big barrier beaches
13 around Toker Point and Warren Point and Nunaluk Spit
14 over by Herschel Island, all along that area of-- a spill
15 would kill a concentration of birds, literally flocks
16 of them; that takes a very small amount of oil, by the
17 way to kill the birds- a spot of oil about the size of
18 a quarter is enough to chill it and these pictures I passed
19 around were extreme situations where they were just com-
20 pletely black, but it is much smaller amount that will
21 wipe them out.

21 Q Thank you Dr. Barry. To
22 your knowledge have there been any agreements with
23 Imperial Oil or any of the other oil companies with
24 respect to the protection of the barrier beaches and
25 offshore islands ?

26 A We've had a running battle
27 with them. The problem is source of granular material
28 which, I remember sitting in some hearings in Alaska and
29 the guy said if they could stake-- instead of staking
30 gold claims they would stake gravel pits and they prob-

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

ably certainly are right. They're extremely valuable. We've managed to, through various government agencies, when Immerk was built they of course wanted the end of the sand spit at Pelly Island. They luckily found a fairly good source of gravel underneath and they-- all they did was sort of undermine it but they didn't destroy the sandspit. That source of gravel was dredged in to the construction of Immerk. The Adgo sites, they did take some gravel from the end of the spit, or it's really a gravel island off Garry Island. I forgot the amount, I think it was 100,000 cubic yards, I could be wrong on that but a fair amount anyway. During that winter we complained bitterly about it. It was a governmental oversight I think that allowed them to get the permit to take it in the first place but that's not the matter of the discussion. They replaced it a lot the next-- during the winter. They trucked in and piled a lot of gravel on there and then eventually removed that and took a little extra at the same time, so that place is in rather difficult straits. I think from their other plans that I hear of-- I'm not privy to Imperial Oil's plans that they'll -- they're looking more for crushed rock and other sources of supply. There have been studies commissioned for granular materials around Tuktoyaktuk and actual Imperial oil did dredge some off the bottom of Tuk Harbour, and did the nice public relations thing of donating half of it to the town of Tuktoyaktuk and use the other half for themselves. We-- I don't think we've had any agreements on it, as your question was worded.

Q I am going to rephrase that

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

From what you say, I understand that they're done on a permit. Do you know of occasions upon which removals have been made without a permit ?

A Not related to the oil companies or Imperial Oil as you specifically asked. Dew Line sites have done it. They destroyed their own harbour at Shingle Point a number of years ago by removing what a barrier beach that allowed them deep water behind and once they removed, everything came storming in and they have a shallow harbour there.

Dew Line sites have taken gravel across Wood Bay in the winter at Nicholson Island, Fort Nicholson Island airstrip. I know that wasn't without-- with-- there was no permit involved there.

Most of the gravel supplies in the delta seem to come from the eskers south of Yaya Lakes. It's an area that was heavily disturbed at an earlier time 1965, '64 summer seismic programs which have left their scars-- still are there but it's already disturbed and most of-- and now they're able to actually truck it out of there or take it down by barge and that seems-- Most companies draw their granular material from that particular spot. The barrier beaches, I don't know of anywhere they've taken other than that one Garry Island thing that I mentioned.

Q But would you consider that to have been environmentally damaging, that activity on Garry Island ?

A Yes, to a degree . They didn't take all that much. Fortunately we were quite

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

disturbed and raised quite a howl about it. Yes it has colony of glaucous gulls nesting on it and occasionally brants nest there. I am not a fisheries biologist so I don't know exactly what is behind it or in the lee of those islands. I did notice a couple of years ago in the fall there was some shallow draft seismic being conducted in that area and every blast brought up a whole lot of small-- I think they were small herrings or finger size fairly small fish that were just-- the dead fish from the seismic were drawing gulls from all over the place. There must have been 5 or 600 following these shallow draft boats.

So it would indicate to me that there's quite a concentration of fish in behind these barrier beaches. The invertebrates and so on that-- it's probably quite a rearing area.

By the way, I will add that I think that they're aesthetically quite an important thing. The barrier beaches of Alaska to me are the most beautiful things in the world, other than the fact that they're covered with oil barrels.

THE COMMISSIONER: Other than the fact they're what ?

A They're covered with oil barrels. That's from Dew Line construction primarily.

MR. EVANS: Dr. Barry, I'd like to address your mind to bird sanctuaries. Now I'm not too clear on the regulation of activities in bird sanctuaries but I imagine you are. What activities are prohibited in these sanctuaries ?

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

1 A I probably better review the
2 migratory bird sanctuary situation in the Arctic. I did
3 allude to it earlier . In the western Arctic I was in-
4 volved in all the initial reconnaissances in 1958 and
5 1960 and their eventual establishment in November of
6 1961. The main purpose for these various bird sanctuaries
7 is to protect nesting habitat for colonial birds. It
8 would be very hard to try to establish a bird sanctuary
9 that would protect whitefronted geese for instance,
10 which is a wide ranging nester over large areas, but
11 colonial nesting birds like snow geese, brant , primar-
12 ily those two species and the murres and to a degree
13 Ross geese further east out of this particular area.

14 The sanctuaries have been in
15 effect since, as I say 1961. Our first sanctuary per-
16 mit for activities in them which I add for the benefit
17 of another department, pre-dated land use permits by
18 quite a few years, were issued-- the first one we issued
19 that I know of in the Western Arctic was in 1963 to
20 Shell Oil for some winter time seismic work and we
21 sort of felt our way along ever since then as to what
22 we permit inside a bird sanctuary and what we don't.
23 There, needless to say, we're sort of in a sense control-
24 ling the surface rights but the subsurface rights were
25 all put under lease in the period of about '61 or '62.

26 Since the birds are there only
27 in the summer time we haven't been with some subdivisions
28 within those sanctuaries. We haven't been too hard-nosed
29 about winter time activities. We have delineated crit-
30 ical areas within any one of these sanctuaries. For

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

1 instance the three small islands south of Kendall
2 Island where the snow geese actually nest. The core
3 area nesting area on Banks Island which is a area of
4 roughly about 8 miles by 24 miles where we've not all-
5 owed any activity, even seismic activity in the dead
6 of winter to go through there, because their propensity
7 at times to drop-- actually destroy the habitat through
8 abuse of their normal procedures, raising the bulldozer
9 blades and all that. Actually bulldozing up the habitat.
10 We've had activities right through, exact center of the
11 snow goose nesting area on Banks Island by Elf Oil and
12 it was impossible to find if they had even been there
13 the following spring.

14 It's a matter of-- we try to--
15 we're very cautious because of accidents and mainly by
16 seismic operators. We have issued permits and been
17 involved with quite a bit of activity inside the Kendall
18 Island bird sanctuary. We've actually done a study and
19 monitored the first drill that was just on the border,
20 the Taglu sight that I referred to in my direct testi-
21 mony. It's-- no two situations are the same. When-- we've
22 asked in some cases, one is right before us now. We want
23 them to move off a low shallow, critical area; not more
24 than 100 yards move for a drill site that puts it into
25 a more stable terrain and we feel can be done, a winter
26 time operation that will not bother the birds when they
27 get back there in the spring. We're very scared of spills
28 and things like that. The biggest problem, I think the
29 land use people of Indian Affairs will bear me out on
30 this, for some strange reason the engineers and their

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross-Exam by Evans

1 great abilities, never seem to be able to dig a sump
2 big enough-- namely a hole in the ground-- big enough
3 to handle all the drilling wastes. We've had prob-
4 lems with Shell Oil where they were down on the river
5 flats and the spring flood actually came over the
6 sides of their drills, of their sump and toxic mater-
7 ials were carried down the river right through the
8 Kendall Island snow goose sanctuary so we're-- That
9 sort of thing we try to prevent. We've learned through
10 all these last 10 or 12 years that we've been involved
11 with this. It's sort of a standing joke among geese--
12 people studying geese that if you ever want to find oil
13 you'll go to a snow goose nesting ground and drill.
14 That's true, not only here but the wintering grounds
15 in the Gulf of Mexico are similiarly in the same sit-
16 uation.

17 Have I covered enough of
18 what you wanted or--

19 Q I think so Dr. Barry
20 thank you. Are there periods when birds are particular-
21 ily susceptible to environmental disturbance, for
22 instance during their migration or nesting periods.

23 A I didn't get the very
24 first part of your question.

25 Q Are there periods when
26 birds are particularly susceptible to environmental
27 damage ?

28 A Well, of course during the
29 nesting period. In actual incubation, when they're right
30 on the nest, any place where they're concentrated, as

Percy, Grainger, Barry, Sergeant
Smith, Stein, Stirling
Cross- Exam by Evans

1 I've mentioned for these ice leads--

2 (PROCEEDINGS ADJOURNED AT 2:50 P.M. DUE TO
3 POWER FAILURE)
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

Percy, Grainger, Barry, Stirling,
Smith, Stein, Sergeant
Cross-Exam by Evans

1 (PROCEEDINGS RESUMED AT 3:15 P.M.)

2
3 THE COMMISSIONER: Well, ladies
4 and gentlemen, we will come to order again.

5 MR. EVANS: Okay, I guess if
6 we have come to order, Dr. Barry, I believe that we
7 were discussing the particular susceptibility in this
8 event to environmental damage of birds, and in particular
9 I was wondering about the cross delta area, the Shallow
10 Bayarea, as this is^{an} area that the companies propose to
11 build there, or the one applicant proposes to build its
12 connecting pipeline to Alaska. Do you see that as an
13 area that's particularly susceptible to environmental
14 damage?

15 WITNESS BARRY: Yes. I think
16 I elaborated on that in my direct testimony, but --

17 Q I believe you did.

18 A -- what worries me the
19 most is this compressor station or pumping station,
20 or whatever they have right in the middle of the delta,
21 and trying to relate that to the data we gathered at
22 Taglu drillsite, and trying to draw analogies; I think
23 there will be some disturbance within a radius of that
24 particular operation. Maybe five miles radius, I'm not
25 all that sure; it's variable for each species, and even
26 with any one given species, it's variable through the
27 season. It is of course one of the important fall
28 staging areas for snowgeese, in particular, but also
29 brant and white-fronted geese occur around that area.
30 On the south side, around the shore of Shoalwater Bay,

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 from Tent Island to Blow River is probably the densest
2 swan nesting area, with the exception perhaps of parts
3 of the area around Swan Channel, which is not too far
4 from the Taglu drillsite.

5 In both those areas I think we
6 have a very very sensitive situation, from a noise
7 disturbance primarily. The buried pipe -- I can't see --
8 we've gone into this a lot earlier, but I think it would
9 be from the compressor station, primarily, and increased
10 air traffic, and things of that sort.

11 Q I was wondering if you
12 had any recommendations with respect to controls on
13 construction, in this area?

14 A Controls on construction;
15 number one, they'd have to make some changes in the
16 routing and the location of these things. I mentioned
17 that before. I think wherever possible, proponents
18 should try to make use of already disturbed sites,
19 instead of spreading it all over. Namely, a compressor
20 station I would prefer to see at Shingle Point and/or
21 at Tununuk, and same with the scrubbing plants and
22 things of that sort.

23 Construction in a general way;
24 wintertime construction. That's one fortunate thing in
25 dealing with birds, they do go south in the winter, and
26 they don't have to have too much of the problems except
27 any damage that may carry on into the next -- into the
28 following -- into the summer season.

29 Q Dr. Barry, I believe
30 Dr. Bliss in his testimony before this Inquiry, stated

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 that he saw no reason why the shape of the Kendall
2 Island bird sanctuary couldn't be changed. Would you
3 care to comment on that?

4 A Yes. I didn't see all of
5 his testimony, I gather it must have been part of a
6 slide show, because it was sort of interrupted; but a
7 purpose in designing any of these bird sanctuaries is
8 to try to set up in the center of it more or less, a
9 core area which, as I mentioned before, is extremely
10 critical. For instance, those three little islands
11 south of Kendall Island, with an area around it where
12 an area around it where a brood rearing is probably the
13 next most important area, and feeding and moulting
14 occurs.

15 In the Kendall Island bird
16 sanctuary, we supply I think by the boundaries that
17 are drawn, pretty much a protection of the habitat up
18 to the point where the birds can fly. In other words,
19 a nest on these three shallow low islands; immediately
20 on hatching they disperse in all directions, usually
21 a cross set out or part of the delta, both east and
22 west, and there is abundant food supply. With that
23 increased number they cannot stay right on those islands,
24 of course. Similarly on Banks Island, a core area as we
25 speak of,^{is} almost devoid of food, but they walk as far
26 as 75 miles, while they're flightless, in a scattering
27 or dispersal from the nesting area; it's primarily for
28 feed.

29 His recommendation of changing
30 it, I don't know what his competency is in recommending

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 changes of migratory bird sanctuaries. I think he's a
2 botanist, he may have botanical reasons for re-describing
3 a boundary; but I would point out at the time we did
4 those original surveys, for that island, for Kendall
5 Island sanctuary, was in 1958, and we now know an awful
6 lot more about the area; where the swans are concentrated,
7 where the white-fronted geese are, and so on. We know
8 much more about it than we did in 1958, and yes sir,
9 I could see some changes, some trade-offs, some areas
10 added and some deleted. In particular the southern
11 parts of it, are included, mainly on a geographical,
12 easily defined river channels, rather than straight lines
13 from point to point.

14 The area I would like to see
15 added would be to the eastward, over to the Mallik area,
16 the Imperial Mallik sites, which I guess were dry holes;
17 and happens to be with the Swan Channel, Harry Channel,
18 Dennis Lagoon; that particular area is extremely
19 important. We were unable to cover it in 1958, but now
20 we know very much more about the area, and it is -- if
21 I had to balance them -- I would say that area is much
22 more important than the southern parts of the Kendall
23 Island bird sanctuary.

24 Now I don't know Larry Bliss's
25 sources of information, but I will state that about
26 three years ago, long before Larry Bliss's suggestion,
27 or even knew of the area, I did have some very personal
28 and confidential discussions with the chief landsman
29 of Imperial Oil, preliminary, nothing actually has come
30 of it, but we have discussed this. I suspect that the

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 information has - I use the term "leaked" -- to Larry
2 Bliss, that he seemed to know anything about it.

3 THE COMMISSIONER: Well he
4 thought -- he referred to it on a slide, and I think
5 it was in passing, he wasn't making a big point, but
6 my impression was he thought the boundary should be
7 moved somewhat to the west. That was certainly the
8 impression he left with me.

9 A Well, that's what I say.
10 I wouldn't get too excited about moving anything to the
11 west because you'd be out in the ocean or you'd be in
12 Garry Island. The north end of Ellice Island, and
13 Langley Island, yes, are fairly important areas, but
14 there're I think main means to protect nesting habitat
15 and to the east is much better. I would add Pelly
16 Island and Pelly Island sandspits to it, but that's
17 another local situation to the northwest.

18 Q Could I just ask you a
19 question about the route? You pointed out that the
20 DEW Line sites along the north coast were still -- were
21 available, that disturbance had already occurred in those
22 sites, and you suggested the compressor station should
23 be built at those sites, and you said that as regards
24 the compressor station in the delta, it should be
25 moved west to Shingle Point, or I think you suggested
26 east to Tununuk. That's essentially the point you made
27 about the DEW Line sites, I think.

28 A It's a matter of coincidence,
29 I think, fortunate coincidence that the Dew Line was
30 constructed with a site every 50 miles, all the way

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 across the Arctic. The proponents have said they need
2 50 mile spreads between their compressor stations.

3 Q Oh, I know, it's remarkable;
4 but the other point you made was, you said that the
5 proposed line across the delta cuts across some of the
6 prime and best waterfowl habitats, and then you listed
7 those habitats. Well, if you were going to move that
8 cross-delta route, let's assume that they have to cross
9 the delta for whatever reasons, where would you move
10 it, north or south, presumably using the -- well, not
11 using the west side of the hinge, maybe you could move
12 it all north or south -- what would you do, or is there
13 anything you can do?

14 A I'm sure I'd have a fight
15 with mammalogists or fish people, or so on. I personally
16 would consider moving it south, into the scrub willow
17 edge area, which is not necessarily the best muskrat
18 or beaver^{habitat} in the delta. There are other people more
19 competent to comment on that. I think relatively, and
20 these are biases that professionals get into when
21 they fight with mammal-sniffers and bird watchers, and
22 things like that, the water fowl habitat that is
23 bisected by the route is probably as important if not
24 more important than the edge area of the better muskrat
25 habitat.

26 I think I could call on the
27 mammalogists here that know the area better. A slight
28 move south would avoid much of this, and I would think it
29 should go right straight into Tununuk; and it would not
30 get into some of the better areas for trapping, or

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 especially muskrat trapping and hunting. In other words,
2 there's an edge area between the taiga or the spruce area,
3 and the sedge part of the delta, namely the willow part
4 of the delta. There's a band through there in between
5 which a move south not too many miles would put it
6 through that particular area.

7 Q Do you mind pointing it
8 out on a map in a rough way? Use this map, maybe this
9 is the best one.

10 A I would prefer down
11 through this way.

12 THE COMMISSIONER: You can hear
13 what I'm saying. Dr. Barry pointed out that Tununuk is
14 a wharf and stockpile site, and he appears to be
15 indicating that if you had a cross-delta route, coming
16 southwest from there, more or less parallel to the present
17 cross-delta proposal, that would be essentially the
18 Barry route. Is that fair, Dr. Barry?

19 A Yes. I think it would
20 solve this white whale problem as well; and Shallow Bay
21 in here is shallow as well, across here.
22 It is at best only four or five feet deep. I believe
23 here it is a little bit deeper, with the best trapping
24 and ratting areas I think you can find I always say
25 this with some hedging because a mammologist must have
26 worked with it more, would know better than I. This
27 would hit the willow edge, this is mostly grass, sedge,
28 this is mostly spruce delta, and the area I think that
29 if I had my choice and had to go, that would be my
30 suggestion.

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 MR. GOUDGE: I would like, sir,
2 to provide Mr. Bayly with a raw map, and perhaps he'd
3 be good enough to have Dr. Barry draw the route that
4 he would propose on the map, and we could then file it
5 so we all know what --

6 THE COMMISSIONER: All right.
7 I think it's pretty clear that if you use Tununuk as
8 a hinge, it just is parallel to the present route,
9 only as far south of it as Tununuk is. But I think you
10 should do that. And Mr. Carter, would you make sure
11 that your people, when they testify next week, explain
12 why that route would not be appropriate from an
13 engineering and an environmental point of view, or that
14 as still from Dr. Barry's point of view why it would
15 be appropriate, from both points of view.

16 MR. CARTER: All right, I'll
17 do that, and I'm sure that if I forget I'll be reminded
18 by some of my friends.

19 THE COMMISSIONER: Well, Mr.
20 Evans, back to you.

21 MR. EVANS: Dr. Barry, assume
22 the situation in which weather conditions in the fall
23 result in a heavy buildup of snowgeese in the delta
24 staging areas, and that there was subsequently a strong
25 storm tide; what percentage of the delta and Banks
26 Island populations could conceivably be effectively
27 destroyed?

28 A In the fall, that staging
29 area --

30 Q Excuse me. Dr. Pimlott
points out to me that I neglected to add that that's

Percy, Grainger, Barry,
Sitrling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 assuming that there had been a previous oil spill, so
2 that there is oil on the surface.

3 A A staging area we've
4 been using quite a bit, covers that whole part of the
5 delta, but it also includes the foothills and they
6 do disperse as far as -- almost to Barter Island in
7 Alaska, and depending on snow cover in the fall, very
8 often the snow line will descend down the North Slope ,
9 and eventually the last place to receive a heavy snow-
10 fall usually, is that part of the delta. The staging
11 area is used by all the snowgeese that come from Banks
12 Island, Kendall Island and Anderson River, in other
13 words, the entire western Arctic population. With
14 some small numbers, sometimes, not every year, staying
15 on the Bathurst Peninsula area. Last year they staged
16 at Bathurst Peninsula for the last part of August,
17 the first couple of days of September, and then moved
18 down over; their movements end up always controlled
19 almost entirely by snow cover, so if you add that little
20 bit to it, that is every snow goose in the western
21 Arctic would be affected, to answer your question
22 precisely.

23 Q Thank you. Now, I
24 understand that you have experienced all of the
25 Beaufort Sea storms since 1957. Is that correct?
26 That you have personal experience of these storms?

27 A I sound like an old
28 salt.

29 (LAUGHTER)

30 Q It was my impression that

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant.
Cross-Exam by Evans

1 you were an old salt. Is that correct though?

2 A Most of them. I missed
3 a few.

4 Q I see. Now, I'm informed
5 that on February 6th of this year, at a meeting of the
6 Arctic Waters Oil and Gas --

7 THE COMMISSIONER: Excuse me,
8 Mr. Evans.

9 MR. EVANS: Yes, Mr. Commissioner?

10 Q Could you hold the
11 microphone a little closer to you? It's a little hard
12 to --

13 MR. EVANS: Okay. Maybe I can speak
14 up a bit too, I wasn't aware that it was hard for
15 people to hear me.

16 Now on February 6th of this
17 year at a meeting of the Arctic Waters, Oil and Gas
18 advisory committee, I am informed that Mr. Lindsey
19 Franklin described the Beaufort Sea as relatively
20 benign. Would you agree with that statement?

21 A No.

22 Q You'd disagree?

23 A Yes.

24 Q Now, from your experience,
25 how frequent do these major storms in the Beaufort Sea
26 occur?

27 A Well, there's usually at
28 least one good blaster every summer, sometimes more
29 than that. Some years we've escaped a good storm. When
30 I speak of a good storm, I'm talking about anywhere

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 any storm where the winds are probably over 50 mph, and
2 a storm where some lives were lost in the Imperial Oil
3 camp, I think that was 1970 or 1971, winds were recorded
4 over 118 mph.

5 Q Now, how high a waves would
6 result from one of these storms?

7 A We experienced one, that
8 was after the worst of it was over, twenty foot waves,
9 in as close in as McKinley Bay, off the end of
10 Atkinson Point. The sea is very shallow, so you can
11 get some pretty good chop, and as a result of almost
12 any -- even light winds -- I remember ten knot winds
13 along the shores near Atkinson Point and Toker Point
14 creating fairly good chop. The wind was blowing against
15 an outgoing tide, so you get quite a chop.

16 I think the meteorologists and
17 the oceanographic people use the term "a hundred year
18 wave" and I'm not sure, I think they're talking about
19 35 feet or so. I suspect that storm of '71, I know
20 some people who were on Baillie Island, and the waves
21 were breaking over the tops of the cliffs at that point.
22 Let's expose the cliffs there have been eroding away
23 at an extremely rapid rate. How large those waves were
24 I'm not sure, but you can, I would expect occasions and
25 spots, especially where the shallows begin, waves of
26 twenty feet or more; and that also is dependent on the
27 degree of ice cover. In an ice free season is when you
28 get the storm tides and the high waves. The storm
29 surges, I can't recall any that have inundated our
30 study area over at Anderson River, where they didn't
happen to have

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

a year in which there was very light ice conditions. That's why they usually occur, you get storms in the spring, and you get hardly any effect from heavy seas, because of the ice cover.

Q Okay. What would the extent of one of these storm surges be? How far inland would it --

A Well, that one in 1970 Tent Island was under water enough that the portable house these people were staying in floated away on them, and that's -- they abandoned it, thinking they would end up out in the ocean. Some goose hunters and fishermen that were out in the Moose Channel area were able to motor right cross country, so all you need to do is look at the driftwood line, and you can tell where these things occur.

In other words, that whole outer delta, with the exception of the old delta, preglacial delta, that's much higher; was under water. Under water enough that you could motor across country, and that has occurred at many of the river deltas; the Anderson River delta at least once a year gets a surge of that type, the whole thing is under two or three feet of water.

Q And how much warning would there be before one of these major storms? I believe in previous testimony it was stated that -- by, I can't recall, one of the experts, that -- there would be several days warning.

A Well, the meteorological

Percy, Garinger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 services are improving in the Arctic. Usually, there's
2 several days warning, unless, there's a couple instances
3 I know -- I'm not a meteorologist -- where storm, extreme
4 low pressure is developed off in the Beaufort Sea, that
5 weren't picked up on shore or offshore reporting
6 stations. That would be a no-warning situation, but
7 most of them there's a pattern of fronts and so on;
8 fairly well predicted.

9 Q Do you recall how much
10 warning there was in the September 1970 storm?

11 A I don't think there was
12 very much. The weather reporting at that time was
13 not all that good. I think the people that were --
14 especially the situation on Tent Island -- I don't think
15 they had any warning. I can't recall, they may have
16 had a day warning, or a forecast that didn't indicate
17 it was going to be as bad as it really was.

18 Q Now, Dr. Barry, I'd like
19 to refer you to an article you wrote, it was published
20 in a May 1970 publication, "Marine Pollution Bulletin".
21 It was titled, "Likely Effects of Oil in the Canadian
22 Arctic". I'm sure you recall that. Do you?

23 A That was five years ago.

24
25 Q Anyway, you made a
26 statement in there, with respect to a possible
27 Mackenzie Valley oil pipeline, and, I believe, an
28 Alaska connecting pipeline. You stated,

29 "Oil leaks into the drainage of these streams, or
30 such rivers as the Firth, Babbage, Blow, Rat, and

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 Ramparts, or the Mackenzie itself, will cause
2 serious damage to waterfowl habitat, and to
3 the ocean and beaches. Considering the large
4 volume of oil carried, a break would be a
5 catastrophe."

6 Now would you -- I assume that you would still agree
7 with that point of view?

8 THE COMMISSIONER: Just before
9 you go on, I've missed something. What event would
10 cause this catastrophe?

11 MR. EVANS: His quote was that
12 a break would cause a catastrophe, in other words, a
13 break in the oil line. Now, I realize that we're
14 dealing with a gas pipeline here --

15 THE COMMISSIONER: No, no,
16 that's all right. You're also dealing with separate
17 systems on the north coast, aren't you? They're
18 independent systems, those rivers. If you have a break
19 at the Blow, it doesn't get into the Babbage, does it?
20 Someone made that point about those systems in the --
21 along the interior route, in the Yukon, that they're
22 all connected, and these systems on the -- these rivers
23 on the coast are not. Anyway, go ahead and comment on
24 that, but --

25 WITNESS BARRY: Yes, a four
26 foot diameter pipeline breaking, I don't think I need
27 much imagination to assume there would be an awful lot
28 of oil going down any one of those streams. Dispersal
29 from one stream to the next would have to be by way of
30 the coast, you know, just swoosh down in like a

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 spring freshet, and whatever might be involved.

2 MR. EVANS: All right, Dr.

3 Barry, you also in the article mentioned leaks as being
4 of environmental damaging effect, and particularly
5 damaging to waterfowl. Would you agree with that at
6 this time?

7 A Oh, I imagine, depending
8 on where such things occurred, and small leaks occur
9 all over -- I've had some experience with them in
10 Alberta -- but a persistent degradation of the habitat
11 if it happened to be near where there's some good
12 waterfowl areas, yes I think it would be quite
13 destructive, over a long period of time. I think it
14 would be the accumulative effect of a lot of different
15 leaks; pipelines, I found just recently two or three
16 of them that occurred around Edmonton. Pipelines
17 fatigue of old age, and there's little problems cropping
18 up all over. Similarly, I imagine, it would be a
19 situation up here.

20 Q I wonder if some of the
21 other members of the panel would like to comment on
22 that possibility, particularly Mr. Stein, with respect
23 to fish?

24 WITNESS STEIN: I'm sorry, could
25 you repeat the question? Q Well, I'm

26 merely quoting Dr. Barry's statement that leaks into
27 these various rivers and particularly a break in an
28 oil line, would cause a catastrophe. And I would assume
29 it would also cause a catastrophe for the fish, and I
30 hope that Mr. Stein might comment on that.

A I think,

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 generally speaking, I would have to say yes, it probably
2 would. I think it would also vary with the, of course
3 the location, and the time of year. I think we are
4 looking at something that was going across-delta,
5 and the indications that we have now of the significance
6 of some of these smaller channels and lakes, and so on,
7 you know the numerous crossings that there would be,
8 that any sort of a break in these locations, I think,
9 would have profound effects.

10 Q Okay. Now, to take
11 another line. I believe in his testimony Mr. Percy
12 discussed sub-lethal effects of oil pollution. Now,
13 would any of you gentlemen care to comment on sub-lethal
14 effects on your particular species? I believe Dr. Percy
15 was the only one who discussed sub-lethal effects.

16 WITNESS BARRY: I think as far
17 as birds are concerned, and considering all the situations,
18 if they're oiled, ingesting of oiled foods, I'm not too
19 sure, what those effects would be, or just exactly what
20 you're trying to get at.

21 Q Okay, I assume that
22 nobody else has any comments on that?

23 WITNESS PERCY: Well I think
24 Mr. Stein brought up one sub-lethal behavioral effect,
25 and that was the avoidance reaction by some fish. I
26 think this has been pretty well documented, that fish
27 will tend to avoid, or they have been shown in the
28 lab to avoid oil. They can certainly detect it and
29 they will tend to avoid it. Certain species, that is,
30 that isn't a generalization that applies to all species,

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 of course.

2 Q Well, one other question
3 that Dr. Barry -- I wonder if you could address your
4 mind to the possible impact of a spill from drilling,
5 coinciding with the disruptive effects of pipeline
6 construction. I wonder if the cumulative effect of
7 those two together would be greater than the parts? In
8 other words, take the Shallow Bay area, I think we
9 discussed that earlier, the effects on the waterfowl.

10 WITNESS BARRY: You're trying
11 to figure the effects of a spill coupled with construction?

12 Q Yes, the disturbance
13 effects of the construction, coupled with an oil spill.

14 THE COMMISSIONER: The
15 assumption being that the construction of a pipeline
16 across Shallow Bay, will occur in the summertime, that's
17 what Arctic Gas tells us, and that's when the birds
18 are in the lower delta, as you've told us; and your
19 pipeline is built that will occur. Mr. Evans is adding
20 another factor, an oil spill in the Beaufort Sea that
21 presumably results in oil being blown inshore, into
22 Shallow Bay. Now, I suppose the prognosis isn't good
23 in both circumstances.

24 A I just assume it would be
25 a bigger mess and a bigger problem.

26 THE COMMISSIONER: I think,
27 Mr. Evans, that all these witnesses have made it clear,
28 what their concerns are, and I don't think it gets us
29 very far to ^{pin} adjectives to these scenarios. We're
30 all capable in this room of drawing our own conclusions,

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 and visualizing a worse case situation and then labelling
2 it; and all of these witnesses sought, I thought, to
3 simply lay out in a straight-forward way, the chain
4 of causation as they felt it might occur. It was only
5 occasionally that they lapsed into pejorative
6 language, as we say.

7 MR. EVANS: Okay. One other
8 matter that I wanted ^{you} to comment on was the disturbance
9 factors, completely unrelated to the pipeline.

10 Would there be significant
11 human activity disturbance of the waterfowl, I guess
12 you can comment on any area, but I'm speaking of the
13 delta area.

14 WITNESS BARRY: Well one
15 disturbance factor that I think would be increased, it
16 will with any development, is increased aircraft
17 activity. We have a fair bit of information on the
18 response of geese, in particular, to aircraft, that's
19 full of variables at different times of the year,
20 depending on whether they're incubating eggs, or
21 whether they're in migration, or things like that; the
22 reaction to aircraft is different. Different types
23 of aircraft have -- bring on stronger reactions. A
24 204 or 205, Bell 204, 205 helicopter, will elicit a
25 reaction from geese at a much greater distance than
26 a Twin Otter. It's a matter of noise, and the
27 frequency, and things like that. I think Dr. Gunn, in
28 his testimony, described some of the sound stimulator
29 experiments they did, where they had geese flaring
30 at distances up to a mile and a half, two miles from

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 their noise box; and getting up and flying, and this
2 I attribute a lot of it to migratory restlessness, not
3 necessarily a serious disturbance, where an aircraft at
4 10,000 feet had birds staying up and milling around.
5 And yet, two weeks later, after they did that experiment,
6 I was out on Ellice Island, and a Bell 205 landed on a
7 small pingo there, with 25,000 geese standing around
8 grazing, and they didn't fly at all, until the guys
9 opened the door of the helicopter and stepped out.
10 A complete different reaction in a matter of two weeks
11 time, so you have different species, when we were doing
12 that Taglu study, we actually tried to disturb a swan
13 on a nest, this swan that was only a quarter of a mile
14 from a drill site. We hovered over it with a Bell 205,
15 which is a big monstrous bit of noise, 25 feet above
16 the bird, and about 25 feet back, and that was about
17 a 45 degree angle from the bird on the nest. We were
18 actually blowing nest material out from under the swan,
19 and she finally got up and walked six feet and hunched
20 down between two hummocks so the wind wouldn't be so
21 bad.

22 We backed off about 3/4 of
23 a mile, and landed the helicopter, and as soon as we
24 stepped out the swan ran. Their reaction to a
25 helicopter or an airplane is completely different than
26 geese, which in some occasions, one time we were
27 transporting some large helicopters to
28 the north end of Victoria Island. There was a sub-
29 audible noise, I guess. The geese in our area were
30 up and milling about 45 minutes before we even heard

Percy, Grainger, Barry,
Stirling, Smith, Stein, SErgeant
Cross-Exam by Evans

1 the sound of the helicopters, and past 16 miles there
2 were four of them in tandem, they passed 16 miles north
3 of us, and the geese were milling about in great stress.
4 It's a variable thing, it depends on the time of year,
5 the particular part of the life cycle they're in.

6 Q Thank you. Mr. Stein, are
7 there species of fish that are likely to be permanently
8 damaged by an extensive oil spill?

9 WITNESS STEIN: I can't think
10 of -- excuse me -- offhand of any that would be
11 permanently damaged, no. I certainly think that the
12 possibility is there, of it being a long-term effect.
13 It is conceivable that there may be some species, such as
14 say goldeye, which could be really wiped out, but the
15 thing is that, at least in the case of goldeye, their
16 numbers are so extremely low, that it's more a factor
17 of the beast itself in the habitat ; that obviously if
18 conditions were suitable they would be around in more
19 numerous numbers, greater numbers, rather.

20 Q Mr. Stein, I think there
21 was some earlier discussion of contingency plans to
22 deal with oil spills. Would you have any particular
23 recommendations as to what form these plans should take?

24 A I think, to my mind anyway,
25 that the big factor right now is to work on the
26 assumption that there is going to be spills, there are
27 going to be spills, be they accidental dumpings, be it
28 a blowout, whatever; and start moving now towards
29 developing techniques and equipment that are going to
30 be able to clean up the spill, as rapidly and as

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 effectively as possible, and in the environment that
2 we are dealing with. From what I have seen of the
3 proposed cleanup techniques and equipment, they are
4 essentially pieces that have been moved up from more
5 temperate zones, and to my knowledge have not really
6 been shown or demonstrated under worse case conditions
7 in the Arctic, and I think this is really what we need.
8 I mean, they obviously work well in nice placid lagoons
9 and so on, and so forth, but the likelihood of them
10 being effective in the type of situations that -- excuse
11 me -- Dr. Barry has just been discussing, to my mind,
12 I think we share the same feelings in that sense. So I
13 think this is really the type of planning that should
14 be moving right now, and I think that from there we
15 have to be looking at where this equipment is going to
16 be situated, as well as having some experienced people
17 around to operate it, rather than whoever happens to be
18 on site at the time. I think this is the real area
19 that we should be moving in right now.

20 Q Yes. You seem to emphasize
21 cleaning up. Do you draw a distinction between that
22 and mitigating the problem? Or is that the same thing?

23 A Well, I think I'd be
24 looking at it as the same thing.

25 Q Okay.

26 THE COMMISSIONER: If it happens,
27 you've got to clean it up, if you can.

28 A Right.

29 MR. EVANS: Now, I believe in
30 your testimony, you discussed an inventory. Do you --

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 is that the same thing as base line data, or do you
2 place some other meaning on an inventory? Maybe you
3 can help me by differentiating those two terms.

4 A Well, I think really,
5 they would essentially be the same, actually. By an
6 inventory I'm looking at survey data, really, and I
7 think this would essentially help form a part of base
8 line information, at least --

9 Q That of course would be
10 required before you could form the contingency plan for
11 dealing with the oil with baseline data?

12 A Ideally, yes.

13 Q Now, I believe that
14 some work was done by you, or your department, with
15 respect to seismic techniques used in the Beaufort Sea.
16 I wonder if you could discuss those briefly?

17 A This was done by a
18 biologist that we had on staff, Mel Falk. I'm not sure
19 exactly what the date - 1973. What he attempted to
20 do was to examine the nature and effect of three types
21 of explosives and explosive device - that are commonly
22 being used in Beaufort Sea seismic activities. Basically
23 what he did was to, with the co-operation of the
24 seismic operators involved, take various test fish,
25 place them in cages and station them at varying
26 distances away from the charges being used. He found
27 that the --there is considerable variance between the
28 techniques. I should perhaps elaborate on the three.
29 One was Aquaflex, which is more or less a cord type
30 of explosive, as I understand. The other was Geogel, a

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 high explosive, and the third was a device called an
2 airgun, which actually operates on the principle of
3 compressed air; and he found that they varied considerably,
4 and he had a very difficult time too in relating this
5 to any sort of work that has been done in the literature
6 Apparently because there is the variance between the
7 types of explosives, variances within the species
8 themselves and their susceptibility to this type of an
9 impact, and also variations in the way that the charges
10 are set, and it's also affected apparently by the depth
11 of the water involved.

12 He did find though that
13 the two high explosive techniques, Geogel and Aquaflex
14 were extremely harmful to fish, whereas airguns
15 essentially had no effect whatsoever. Is that the --

16 Q Yes, that's the answer,
17 or the question I wanted answered. Now, do you know
18 anything about how effective airguns are, for the
19 purposes of the oil companies?

20 A Well, I'm far from being
21 an expert in this field --

22 Q I realize that.

23 A -- and it probably shows
24 by now, but it's my understanding that airguns do not
25 give as good a quality readings on the structures, as
26 do the two high explosives types.

27 Q So which method do the
28 companies use the most, do you know that at all?

29 A Not positively, but I
30 believe that still they're generally using high explosives.

Percy, Grainger, Barry,
Stirling, SMith, Stein, Sergeant
Cross-Exam by Evans

Q I see. Okay, thank you.

I understand that there's a proposal to dredge Tuk Harbour, to accomodate drill ships. What effect would this have on the fishing in that area? I also understand there's a domestic net fishery in Tuk Harbour. Is that correct?

A That's correct, yes.

Actually, there were two dredging proposals that I was aware of, and Dr. Barry made reference to one; I'm not sure whether it's the same one or not, but there was a proposal to dredge areas of the inner harbour for land fill purposes. This one I am not aware of the status. I say if it was the same one as Dr. Barry was referring to , then presumably it's already gone on. There was some consulting work done in relation to that, and I can't recall exactly who did it now, but as I do remember, there were two or three locations that were normally fished by the people of Tuktoyaktuk; and the dredging as proposed, this is the land fill operation again, at that time would have wiped out one or more of the sites.

The conclusion that the consultant made at that time was that fish were fairly abundant throughout the Tuk Harbour area, and that the only reason why these particular areas were fished by the people was because they just happened to be the most convenient to the settlement itself. However, there is no supporting data on that, nor do we have any for that matter.

The impact of the dredging, I

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 think, is a little bit more difficult to discuss. I'm
2 not quite sure how far in the dredging will have to be
3 conducted. Now if it is in the inner harbour, as well,
4 I know most of it stretches quite a ways out; but if
5 it is into the domestic fishing area, then potentially
6 we are going to have problems. The big thing of course,
7 is where do they deposit the spoil? It's going to be
8 side cast in a fairly restricted area, such as I recall,
9 that part of Tuk Harbour being; if indeed these fish
10 are congregating there for spawning or feeding purposes,
11 they're going to be lost, I think.

12 Now, that, to me, would be a
13 good possibility. I'm not convinced in my own mind, and
14 I must say again that we do not have the data available
15 to really qualify this much, but normally the fishermen
16 know where the fish are, and that's where they're going
17 to set their nets. I suspect then, on the basis of that
18 alone, that these fish are congregating in these areas
19 for say, either feeding or spawning purposes; so the
20 potential is there.

21 The other problem too, that in
22 my opinion, if indeed Tuk is dredged, then we're looking
23 at a very long-term effect here. Partly because I
24 suspect that we are going to be looking at annual
25 maintenance dredging as well, so that if indeed these
26 areas are lost, it's I think quite doubtful whether
27 they're eventually going to recover, simply because of
28 the annual addition of more silt.

29 Q On page four of your
30 testimony, you discuss Kugmallit Bay. I wonder if --

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 that it's not clear there how important a fishing area
2 this is. I wonder how important it is, and how much we
3 know about it? Or how much you know about it?

4 A I personally am not aware
5 of Kugmallit itself being used extensively for fishing.
6 I think it is highly important as far as^amigration route
7 is concerned, it appears that the middle and east
8 channels probably carry more -- greater fish runs, that
9 is, than do the western portions; so that there in most
10 likelihood would be considerable numbers of fish
11 utilizing the area as far as passing through.

12 I don't -- other than the real
13 inshore areas, which we, I hope have covered sufficiently,
14 that is the lagoons and the smaller channels and whatnot,
15 I'm not aware of Kugmallit itself being --

16 Q I'm sorry if I misled you.
17 I was meaning that it was an important fish population;
18 and I was curious as to how much research had been done,
19 into the area, how much you knew about it.

20 A Well, as part of the
21 Beaufort Sea program, our study attempted to look more
22 or less at the entire delta; I wouldn't say that any
23 more emphasis was given to Kugmallit than to the rest
24 of the outer delta. I don't know how much more --

25 Q You're saying you don't
26 really know very much about the fish in that area?

27 A We do about the inshore
28 area, this is where the emphasis was perhaps placed, but it's
29 also the area that I think is most generally frequented
30 by the fish.

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

Q Okay. Thank you.

Now, Dr. Grainger, in your evidence you stated I believe that the Beaufort Sea was nutritionally poor. What is the reason for that? You may have gone over some of this in your testimony.

WITNESS GRAINGER: I made that point with regard to part of the Beaufort Sea, namely the offshore waters outside the region of immediate river influence, that is outside of the region influenced directly by the river. Within the river plume itself it seems the nutrients are quite abundant, having been contributed by the river; but outside the river plume, the nutrients near the surface appear to be consumed early in the season of plant production. Once consumed, the renewal or replacement of them in the upper few meters, which are the surface waters where the light reaches the waters, and hence in which plant production goes on, or can go on; that the nutrients are used early in the season and they're simply not replaced, sufficiently rapidly to allow the sort of maximum potential plant production to continue.

Q What is the reason for this lack of mixing between the water flowing out of the river and the water in the Beaufort Sea?

A Well, there is a degree of mixing, certainly, and it is in the area where the two come together, where production is relative to the whole area, fairly high. I'm referring here to the area farther offshore, outside the river plume, beyond the area of mixing, which is a large part of the open

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 Beaufort Sea.

2 Q Would storms have an effect
3 on -- you know, the number of storms, and the intensity
4 of storms, have an effect on this mixing?

5 A I expect they may. This
6 is something which better information could be gotten
7 than from me, from the physical oceanographers; but if
8 I could just suggest perhaps that wind, strong wind
9 does disturb the surface of the sea, and does add
10 certainly a potential for mixing near the surface,
11 which isn't there in the absence of wind.

12 Q Now, I believe you stated
13 that all of your data came from two years, is that
14 correct?

15 A No, we have information
16 which -- most of our information came from three, a
17 period of three summers.

18 Q Three summers.

19 A Yes.

20 Q I see. I was wondering
21 if there could be significant differences, in other
22 words if your sample was large enough to draw definite
23 conclusions in this area.

24 A Well, we weren't able on
25 each of the -- or during each of the three seasons, to
26 sample widely over the bay, sufficiently widely to
27 compare broad areas; but we were able to determine
differences, and one short example may show that.

28 In 1973, we collected from
29 several stations a few miles off the Tuk Peninsula,
30 and the information we got on that occasion showed a

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 very diverse and rich zooplankton, living under conditions
2 of quite high salinity; under essentially marine
3 conditions, as distinct from the opposite extreme here,
4 which is brackish rivermouth conditions. So that, a
5 sort of snap statement on the basis of those samples
6 would have been -- this is a rich area with many species.

7 Two years later, within the
8 period of four or five days in the calendar, we collected
9 from the same, essentially the same points, and there
10 we found a greatly reduced number of species, in water
11 which, in which the salinity was very low, and a
12 similarly quick appraisal of the situation ^{there} would have
13 caused one to say it's extremely sparse, production is
14 very low. And this was simply a coincidence of sampling
15 under two conditions of, presumably of recent wind
16 history.

17 In one instance the first one,
18 the river plume had been deflected inward, inshore, and
19 that offshore oceanic water moved in. In the second,
20 following either southerly winds or light winds, the
21 river plume had moved off, and we were sampling an
22 entirely different ecological situation; but both, on
23 the same points, essentially, as indicated on the
24 map.

25 Q Now, I believe that you
26 stated that one of the important things in this model
27 of yours, is how much light is entering the water, is
28 that correct?

29 A It certainly is a factor
30 of importance.

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam By Evans

1 Q Now, I wonder if this
2 would be significantly affected, if there was a large
3 oil slick, from an extensive blowout of crude oil, lying
4 on the surface?

5 A Well, it appears that
6 light is the -- penetration of light through the surface
7 of the sea is inhibited by an oil cover, consequently it
8 is, I can only suggest that in the presence of such a
9 cover the light would be at least reduced, and possibly
10 reduced to a point which would inhibit plant production.
11 I don't have positive measurements of this.

12 Q Now, if it were to inhibit
13 plant production, what effects would that have on the
14 whole system of life in the Beaufort Sea?

15 A Well, I attempted to make
16 that point yesterday, in the figure one of my testimony;
17 and endeavoring to show that there's a sequence of events,
18 which are dependent, that is to say, which the upper
19 levels are dependent upon the lower; and near the base
20 line is the primary production level, the quantity of
21 plants. Consequently, a significant reduction in that
22 quantity of plants, would inevitably affect the food
23 lines which progress from that point upward.

24 Q So this might have a very
25 significant detrimental effect on other life?

26 A It could, indeed, have
27 that effect.

28 Q Now, I believe earlier
29 you stated that the knowledge or scientific data in
30 the area was very scanty. Is that correct, that

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 scientists really don't know very much about the
2 Beaufort Sea.

3 A Yes, depending upon your
4 point of view; that's a difficult question to answer.

5 Q Yes, I realize that, it's
6 probably an unfair question. How much scientific work
7 is presently under way in order to fill this gap in
8 knowledge?

9 A Well, at the present time
10 I'm not aware of any work which is actively under way
11 in the Beaufort Sea, on this. We worked a period of
12 time, which I described to you. In the lab which I
13 represent, we have been carrying on for several years
14 a continuing program, the point of which has been to
15 try to define some of the perhaps basic issues here,
16 in terms of trying to understand, quantitatively, the
17 relationships which again, I referred to yesterday in
18 my figure; to try to get at really the factors which
19 control quantitatively, primary and higher production
20 levels in different parts of the Arctic marine system.

21 To a very limited degree, that
22 work we hope we will be able to continue, elsewhere in
23 the Arctic.

24 THE COMMISSIONER: The point
25 I thought you made yesterday, Dr. Grainger, was that
26 you said that the Beaufort study project over the two
27 summers, had been carried out in unfavorable conditions,
28 then you proposed the sort of two-pronged program that
29 you would urge. One, to obtain the basic knowledge of
30 the ecology of the Beaufort Sea, and two, to study specific

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 impacts on specific -- of oil on specific species, as
2 I recall. Summarizing it, that's essentially what you
3 told us, and the two-pronged program that you urged is
4 not now under way. Is that where we're at?

5 A Well, it is to some extent
6 under way, because again it does form at quite a low
7 level. By that I mean, a level of -- I'm speaking
8 quantitatively here -- we are trying through our
9 in-house program to continue both kinds of study, which
10 I tried to suggest yesterday are not necessarily
11 mutually exclusive; but they do come together in some
12 degree in getting at problems of the kind that the
13 Beaufort Sea presents us with. But there's no large-
14 scale activity of the kind planned, or in sight, at
15 the present time, to my knowledge.

16 MR. EVANS: Well, would you
17 like to see such a program underway?

18 A Oh, unquestionably, I
19 would, yes. I think that it's of very great importance.

20 Q I have kind of the
21 impression that your Beaufort Sea program was somewhat
22 of a force-feed operation, and it might have been more
23 productive^{for it} to have been continuing at maybe even a
24 lower level of intensity.

25 A Yes. It came up quickly,
26 it was carried out in a very short space of time, there
27 was a sense, of course, of urgency and rush throughout;
28 and there's a very strong requirement for more time
29 to continue this type of thing.

30 THE COMMISSIONER: There's a

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 what? I didn't hear that.

2 A A great requirement for
3 more time to continue studies of this kind.

4 MR. EVANS: One other question,
5 Dr. Grainger. On page six of your testimony, you refer
6 to Corexit. I don't know what that is, maybe you
7 could tell the Commissioner what Corexit is.

8 A Yes, it's a dispersant,
9 quite commonly used I believe in an oil dispersant.

10 Q On petroleum?

11 A Yes.

12 Q Thank you.

13 Dr. Sergeant, you stated in your testimony
14 that very little is known for certain about food
15 habits of white whales in the Beaufort Sea. I wonder
16 if you could discuss the need for such information in
17 terms of understanding the effects of petroleum
18 development in the Beaufort Sea?

19 WITNESS SERGEANT: I think
20 the problem is that much of the feeding by the whales
21 takes place offshore, and it's very difficult to get
22 samples offshore. We can only infer from small amounts
23 of stomach contents in the delta, remains of hard parts
24 of animals eaten offshore; and shallow water areas
25 like Holman Island where Dr. Smith has obtained some
26 specimens; and from knowledge of fish in the Beaufort
27 Sea, and by inference from other areas.

28 It seems very probable that
29 the main food in the Beaufort Sea is polar cod,
30 (boreogadus) and probably sea herring is important late

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 in the summer, in the Liverpool Bay area. River fish
2 seem to be eaten to a small degree, probably not from
3 any lack of desire by the whales, but the fact that
4 the fish avoid the whales by keeping in very shallow
5 water.

6 It appears that squid are
7 also taken offshore, judging by the beaks that are
8 found in the stomachs of the whales. I think that's
9 probably about the extent of the knowledge in this
10 area. There's good knowledge in other areas of the
11 Arctic.

12 Q Thank you.

13 THE COMMISSIONER: Dr. Sergeant,
14 Mr. Webb of Slaney & Co. said that he didn't know where
15 this herd of 5,000 belugas, that calves in the
16 Mackenzie Delta every summer, he said he didn't know
17 where they spent the winter. He didn't know whether
18 they went south through the Bering Straits into the
19 Pacific. Do you know where they spend the winter?

20 A They undoubtedly pass the
21 north Alaska settlements in spring. We followed them
22 along the north Alaskan coast in the autumn together
23 with the bowheads to some degree. I recently received
24 a report from an American investigator of a large herd
25 off the north Alaskan coast in September. I think
26 that's about the extent of our knowledge. I think it's
27 probable they pass through Bering Straits, the bowheads
28 certainly do. I'm not sure about the white whales.

29 MR. EVANS: Dr. Sergeant, do
30 you think that it's important for us to find out the

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 white whale's food chain, and study you know, where the
2 food comes from?

3 A I think it is fairly well
4 known that ^{they} do inhabit these leads in the spring, before
5 they come into the delta. There was some very good
6 observations, very early by Stephansson, which I mentioned
7 earlier; and in such a lead system, they must be feeding
8 on polar cod, I think. We have this fairly good
9 knowledge of their distribution over the Beaufort Sea,
10 their dispersed distribution.

11 It's evidently important to
12 the whales that that offshore habitat remain intact;
13 but I sort of feel myself that the dispersed animals
14 obviously are ^{at} less risk because they are dispersed, than
15 when they concentrate. Does that really answer your
16 question?

17 Q Since the white whales
18 are a shared resource with other countries, and United
19 States and the U.S.S.R., what do think the pros and cons
20 are of developing a co-operative research program
21 with them, in conjunction with petroleum development?

22 A We already have a very
23 good informal contact with the U.S. scientists. I think
24 it would be desirable to increase this, we certainly
25 have it in mind. The only species which comes under
26 the International Whaling Commission, we have in this
27 region, is the bowhead. Although the International
28 Whaling Commission has been moving in the direction of
29 extending its interests to the small whales, I don't
30 believe this is done in a formal sense, yet. It's

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 certainly desirable, scientifically, of course.

2 Q Would you like to see
3 an international agreement, such as that, for polar
4 bears, with respect to white whales?

5 A Well, I think the frame-
6 work probably already exists, for the International
7 Whaling Commission to do so.

8 Q I see. Now, I believe
9 in your testimony you discussed the Inuit hunting of
10 whales at the mouth of the Mackenzie. Now, in that
11 area that you posed that they -- that be set aside as
12 a preserve, do you anticipate any native hunting being
13 allowed?

14 A Well, at present --

15 Q In your figure 4, you
16 had an area marked out.

17 THE COMMISSIONER: You refer to
18 any hunting by natives or whites or anybody else,
19 didn't you?

20 A The present distribution
21 of whaling is given in the 1955 Slaney Report, up to
22 1974, and -- if I can find that -- Table 6, in
23 the Slaney 1975 Report, covers, yes, it covers '72 to
24 '75, and the present distribution of whaling is
25 fairly strongly in the Kugmallit Bay and Tuk areas;
26 although I'm not quite, yes those are the camps, I
27 think.

28 Q Yes, that's the catch.

29 A The catch, yes, totalling
30 about 125 landed. The distribution is about over 100

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 in Kugmallit Bay, and apparently out of Tuk itself,
2 with Shallow Bay camps, about 25 to 30, Kendall Island
3 very small in recent years.

4 The Shallow Bay camps have been
5 various places from Tent Island and west, to Shingle
6 Point, and I understand from Dr. Barry, at a site in
7 between. I haven't really yet considered the details
8 of such a proposal, except that it occurs to me that
9 the stresses on the whales in the past have been hunting
10 only, fairly evenly distributed, with a bias towards
11 the east side; that if some compromises had to be made,
12 they might possibly be made by the hunting community
13 also, since the effort in that region is low, as compared
14 to the effort on the other side; but I haven't really
15 thought out the implications of this.

16 MR. EVANS: I suppose
17 Whitefish Station is the major whaling --

18 A Whitefish West is in
19 between Tent and Shingle Point.

20 Q Well, would you be
21 prepared to allow some kind of controlled hunting in
22 the proposed preserve?

23 A I'm concerned with the
24 total stresses, and it's very difficult to consider
25 the scenario in that region, until I have at least a
26 concept of what laying a pipeline might involve. I
27 haven't actually thought -- studied in detail the
28 distance at which the whaling crews go out. I had
29 been out once with a whaling crew at Shingle Point. It
30 was an abortive trip, we didn't go very far because the

Percy, Grainger, Bary,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 weather was poor; and I don't think those boats go out
2 very far, because it's an open exposed coast.

3 I would prefer, if this rather
4 radical concept of total protection of the whales should
5 go forward, for the benefit presumably to some degree
6 of the hunters, that some restraint by the hunters in
7 one area, far from where the major hunting takes place,
8 is perhaps not a very major compromise.

9 Q Dr. Sergeant, I wonder,
10 you discussed quite a lot the Slaney Report, and have
11 you considered -- I'm informed that it was not to --
12 they were instructed not to consider the impact of
13 artificial islands and drilling beyond a construction
14 phase. Have you considered that, and I wonder if you'd
15 comment on that?

16 A Yes, that was a major
17 direction, really, in the Beaufort Sea project. I felt
18 myself that we should keep a good eye on the inshore,
19 because this is where things were actually happening.
20 As far as the blowout scenario was concerned, I did
21 look into that, and I did write about that in my
22 Beaufort Sea interim report, and final report, which is
23 still in preparation.

24 Again, it occurred to me that
25 an oil spill occurring some distance from the coast, to
26 a large extent acts on these animals when they're
27 in the dispersed phase. It clearly might be quite
28 serious, at some stages of the seasonal cycle; and the
29 things I have to say I think have essentially been
30 summarized by Dr. Millen in his report which will be

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam By Evans

1 tabled. I think that whales avoid oil wherever
2 possible, and the problem would seem to occur when, if
3 oil should spill into the leads and they were not able
4 to move very freely away from the lead systems which were
5 covered with oil --

6 THE COMMISSIONER: Well, Dr.
7 Sergeant, a whale is a large mammal, these ones are.
8 Even the small whales are large animals. You don't
9 anticipate that a whale being forced to use a lead
10 that was covered with oil would interfere with the
11 whales breathing capacity, do you? The whale would
12 still be able to survive, if it couldn't avoid the
13 oiled lead. Are we in agreement on that?

14 A The whale would certainly
15 attempt to breathe the air. A certain amount of oil
16 as it rose would obviously reside on the top of its
17 head, around the blowhole, and it might get into the
18 respiratory passages. It would probably ingest some
19 oil which ^{might} cause some lesions in the digestive tract.
20 The studies of Dr. Smith and Dr. Geraci on seals have
21 shown that there is, with the crudes that they were
22 using, I believe, not any direct lethal effects.
23 There is some evidence from young harp seals that were
24 oiled in the Gulf of St. Lawrence, with heavy bunker
25 sea, that there was no immediate mortality. These
26 animals, you see, do have a blubber layer, so they
27 don't suffer the problems that birds have, of losing
28 heat, and possibly polar bears might. That problem
29 doesn't arise. So I suppose the effects on the breathing
30 passages and the digestive tract, which would perhaps

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 be the more long-term effects, and possibly the effects
2 on eyes and other sense organs, might be the most
3 serious.

4 As to avoidance, clearly the
5 biggest species, the bowhead, can make longer dives
6 to get away and find another lead that's clear of oil,
7 than the white whale could.

8 MR. EVANS: Dr. Sergeant, with
9 respect to Shallow Bay, what are the factors which
10 determine the alteration from year to year in the timing
11 of whale movements into the bay?

12 A There doesn't seem to be
13 a great deal of variation from year to year in timing;
14 there's a certain amount of variation from year to year
15 in the area used. In the 1974 severe season, they had
16 great trouble getting into the Kugmallit Bay area, there
17 was a polinear open-water area some miles off which
18 became very full of whales at one point. That side had
19 most of the ice.

20 The main changes that seem to
21 have occurred are that when you have a severe ice year,
22 they move closer inshore, because the warm water is
23 closer in to the coast. I have a feeling that in a mild
24 year, probably the animals may remain quite a long way
25 offshore, or remain close inshore for a shorter period.

26 Q I believe in your testimony
27 you discussed the effects of sounds on these whales.
28 What do you think the effects of the sounds from
29 construction of the pipeline would -- across Shallow Bay --
30 would be on the whales? How would they react?

Percy, Grainger, Barry, 18620
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 A The difficulty I have is
2 that I don't know ^{what} water borne sounds are produced by
3 a pipeline. You're talking about, I take it, about a
4 pipeline that has been constructed.

5 Q The one that's to be or
6 that's proposed across Shallow Bay.

7 THE COMMISSIONER: Well I
8 think Mr. Evans is talking about construction across
9 Shallow Bay in summer, and no doubt have a vast
10 assortment of sounds. It's a big project.

11 A I take it the construction
12 would involve a fair amount of boat traffic, not only
13 with the barges, dredges in the channel itself, of the
14 proposed line, but some support activity. I'm not quite
15 sure with the very shallow depths involved, whether any
16 additional dredging would be needed to give access. There
17 would seem to be a fair amount of boat traffic in such
18 a situation, and this would seem to produce a great
19 deal of activity and noise, and possibility of some
20 oil or other debris which would then drift downstream.
21 Silt, of course, but silt is part of the landscape, so
22 I don't suppose the silt itself would be very
23 destructive. So the noise effect, I suppose, would
24 be the main one, and this would displace the whales
25 seaward, I presume.

26 THE COMMISSIONER: Yes, but
27 leaving -- it isn't just noise. If you -- you just
28 saw Mr. Barry and me looking at those proposed routes
29 across the delta. If, in the summertime, you're
30 building this pipeline across Shallow Bay, and of

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 course you're burying it beneath the bed of Shallow Bay,
2 so you have dredges busy, presumably in July, a critical
3 month as far as the whales are concerned. You have pipe
4 actually being lowered, you have a great deal of activity;
5 apart from noise, there may be something that comes very
6 close to physical obstruction, for a large animal;
7 and the combined effect of all that activity, would it
8 be essentially to proclude the whales from entering
9 Shallow Bay above the crossing?

10 A I think it probably would.
11 It appears to be in general toward -- to be the upstream,
12 near the upstream limit of the main mass of whales.

13 Q Yes, we discussed that
14 yesterday, but I'm putting to one side the question,
15 "Well how many of them go that far?", and it may be
16 that it's not vital, that they can find plenty of warm
17 warm water in west Mackenzie Bay and calve there, and
18 we will not have deprived them of calving habitat of
19 any consequence. That's something that I'm fully aware
20 of; but given the extent of the activity, which isn't
21 just a putt-putt crossing Shallow Bay; it's a fairly
22 big project, do you think that any of them are likely
23 to venture through that scene of operations?

24 A I think it would be a
25 barrier, I think the animals would be displaced seaward.
26 I couldn't estimate by how many miles.

27 MR. EVANS: What do you think
28 the consequences would be for those animals that you've
29 spoken of that would be displaced seaward? Would they
30 be --

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 A They would be displaced
2 into somewhat cooler water than -- and particularly if
3 one had a cold year, with the ice fairly close, I suppose
4 that could put them into a situation which is below what
5 they prefer, the optimum that they prefer. It appears
6 to occur in about 50% of the years, that they'll
7 penetrate that far.

8 Q I suppose that could be
9 possibly fatal for some of the more immature animals?

10 THE COMMISSIONER: Well, isn't
11 that sheer speculation?

12 A We would have to have the
13 temperature overlay with an analogy of how far the
14 displacement occurred, and it's a bit hard to predict.

15 Q If the ice extended right
16 up to the crossing, then we could anticipate serious
17 effects. I mean, that's the kind of -- not at all likely
18 to occur --

19 A It's improbable, I think.

20 MR. EVANS: Dr. Stirling, in
21 your testimony today, I believe you referred to the
22 agreement that we have, or Canada has, with other
23 countries with respect to polar bears. Is that a treaty,
24 or -- is it of the force of a treaty or is it merely
25 an agreement?

26 WITNESS STIRLING: It, as I
27 understand it, doesn't have any actual regulations that
28 are enforceable. It's an agreement. Now, again, I will
29 state that I'm not a lawyer and I don't know all the
30 ins and outs of these types of terms, but as I understand

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 it, it's an agreement in principle, which has a number
2 of particular things that the countries have signed and
3 agreed to do. It does not come into effect until three
4 of the five parties have ratified. At the present, only
5 Canada and Norway have ratified. The United States and
6 Denmark have been maintaining that they are going to
7 ratify soon, "soon" is a matter of definition, I
8 suppose; so it isn't actually even in effect, at the
9 moment, but I expect that it probably will be, I would
10 guess it will be in effect within six months.

11 THE COMMISSIONER: Dr. Stirling,
12 I understood from a witness who gave evidence in phase
13 3, his name's on the tip of my tongue. Yes, Dr. Novakowski
14 that all of these circumpolar countries had enforced
15 within their own borders, within their own waters, a
16 policy of not taking any polar bears at all, and that
17 it was only Canada that allowed any polar bears to be
18 taken each year; and they were allocated to Inuit hunters
19 in these villages. Am I right about that, or am I
20 not -- well would you tell me?

21 A Sure. The situation at
22 the moment is that, sort of going around the world, the
23 U.S.S.R. has completely closed hunting season. They
24 apparently almost eradicated their polar bears by 1956,
25 at which time they declared a completely closed season.

26 The United States as of
27 November 1972 when the Marine Mammal Act came into effect,
28 completely stopped polar bear hunting, except for
29 subsistence use by Inuit and I just forget the other
30 group, that's another native group, anyway. Aleuts,

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 thank you.

2 Canada allows hunting to
3 Indians and to Eskimos, and non-Indian, or if you like,
4 non-resident, which usually means white sport hunter,
5 are allowed to hunt polar bears in Canada on a -- within
6 the quotas allowed to settlements throughout the
7 Northwest Territories; the maximum that is allowed
8 usually to any settlement that wishes to apply to guide
9 a non-resident is about six, and the numbers that have
10 been guided have varied, I don't have the exact figures;
11 but they have ranged anywhere from a half a dozen up
12 to about twenty or twenty-five at the most.

13 Greenland still -- or Denmark
14 for Greenland still allows hunting of polar bears by
15 Greenlanders, and I'm never really exactly sure if that
16 includes Danes that are resident in Greenland, because
17 they maintain that a Greenlander is a person who lives
18 in Greenland. And in any case, they take approximately
19 125 polar bears a year.

20 Norway, up until very recently,
21 were taking polar bears as well, and they have set --
22 they have simply stopped all polar bear hunting for the
23 moment, but I suspect that they will, in the course of
24 time, open it up again on a quota basis, because --

25 THE COMMISSIONER: That's
26 Norway?

27 A Norway, yes, which
28 administers Spitzbergen, which is the area --

29 THE COMMISSIONER: That's
30 where the bears are, not the mainland.

Percy, Grainger, Barry,
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 A That's right. Not on the
2 Norweigan coast, that's correct. They are starting
3 to have more and more bear problems in some of the
4 mining settlements that they have in Spitzbergen, and
5 I expect they will probably open up trapping again. In
6 their case it was mostly trapping rather than hunting,
7 it was a fur market. I expect they'll probably open
8 it up on a quota basis in the foreseeable future.

9 Q Well, if this agreement
10 that you showed us, were to be ratified and were to
11 come into force, in what respect would the situation
12 as you've described it, be altered?

13 A It wouldn't alter it a
14 great deal. The big definition, the most critical
15 definition in there is the definition of "native",
16 because native hunting is allowed by all countries,
17 within management boundaries. In other words, if you
18 have some idea of what the size of your population is,
19 you have some idea of the numbers of animals that can
20 be removed annually without damaging that population,
21 and they can be removed by natives.

22 Canada submitted a fairly long
23 letter of interpretation, which included within the
24 definition of native, the guiding of non-residents by
25 natives, provided that no mechanized transport was used,
26 and that essentially -- I just forget the exact wording --
27 but to the effect that traditional native methods, in
28 other words, dog teams be used for travel etc.,

29 THE COMMISSIONER: This is
30 what we call tangential, but what about aircraft?

Percy, Grainger, Barry
Stirling, Smith, Stein, Sergeant
Cross-Exam by Evans

1 A No, aircraft is definitely
2 not permitted, whatsoever, except for in the case of
3 for example, in the case of native sport hunting in
4 the Northwest Territories, for putting in field camps.
5 The use of the so-called traditional skidoo is open
6 to a certain amount of interpretation.

7 The major thing that seemed to
8 be the essence of this agreement when it first came
9 together was that it was a subject on which, I believe,
10 the first ecological subject on which the five more
11 or less circumpolar nations could agree, to come to
12 some sort of basic agreement on some basic ecological
13 aspect, and I think that part of the hope is that if
14 the polar bear agreement works reasonably well, that it
15 might eventually lead to some sort of further agreements
16 on things such as pollution of the polar basin by
17 chemicals coming downstream major rivers, that kind of
18 thing.

19 Q What is the population of
20 polar bears, world wide, approximately?

21 A Well, nobody really knows.
22 To answer your question very briefly, nobody really
23 knows. The estimate that is most currently quoted now
24 is 20,000 plus.

25 Q How many of those are
26 on the Canadian coast?

27 A Well, again, nobody knows,
28 and in one sense it wouldn't really help us if we did,
29 because the population is divided up into a number of
30 much smaller sub-populations; and you have to manage on

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 a local basis, but it would, I would say it would
2 probably be a reasonable -- reasonable to say that
3 there were 15,000 plus polar bears in Canada.
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 Q How

2 many of those would be within -- on the Western Arctic
3 coast within the purview of the region we've been dis-
4 cussing?

5 A The Western Arctic is,
6 as Dr. Grainger referred, a fairly, or an area which is
7 not nearly as rich in marine life as some other parts
8 of the Arctic, and in the period of 1971 to '73 when
9 conditions seemed to be "better", in quotation marks, out
10 in the Beaufort Sea, I estimate the population was in
11 the vicinity of 1,500, possibly a little bit more, but
12 in that general vicinity. There has been a very marked
13 decline in the number of polar bears in the last two
14 years and I estimate the population -- well, mathemati-
15 cally it could be as low as 1,000, I doubt that it
16 actually is, it's probably around 11 or maybe 1,200
17 at the most at the moment.

18 THE COMMISSIONER: Excuse me.
19 What time is it, Mr. Goudge?

20 MR. GOUDGE: It's almost five
21 o'clock, sir.

22 THE COMMISSIONER: Do you
23 suggest that we break for a few minutes and carry on
24 for another hour, or break now until tomorrow, or what?

25 MR. GOUDGE: I thought we might
26 have a short break now and counsel could huddle to see
27 where we go from here.

28 THE COMMISSIONER: I think we
29 should try to complete the cross-examination of this
30 panel, certainly Mr. Evans' cross-examination.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 MR. GOUDGE: I take it
2 that Mr. Evans is almost through.

3 MR. EVANS: Yes, that's correct,
4 Mr. Goudge.

5 MR. GOUDGE: Perhaps we
6 could huddle for five minutes, take a break and then
7 come back.

8 THE COMMISSIONER: Right.

9 (PROCEEDINGS ADJOURNED AT 4:50 P.M.)

10 (PROCEEDINGS RESUMED AT 5 P.M.)

11 MR. GOUDGE: I may say, sir,
12 that the consensus of counsel would be to carry on
13 now and complete Mr. Evans' cross-examination, which
14 he advises me will take no more than another 20
15 minutes or half an hour. Then break for the day and
16 come back sharp at 9:30 tomorrow morning to complete
17 the cross-examination of this panel, which I wouldn't
18 anticipate would take more than an hour and a half
19 or so, and then go into the next set of evidence,
20 which is Messrs. Yates and ^{Elliott}

21 MR. EVANS: Q Now, Dr.
22 Stirling, we were discussing the possibility of a --

23 THE COMMISSIONER: Excuse
24 me, I should say, Dr. Stirling, I don't attribute
25 that account of circumpolar policy in relation to
26 polar bears to Dr. Novakowski. That's just my
27 garbled version of what he told us.

28 WITNESS STIRLING: That's
29 fine.

30 MR. EVANS: Q Dr. Stirling,

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 with respect to the polar bear treaty, do you have
2 any indication of how this will be implemented, will
3 there will be a Polar Bear Act similar to the Migra-
4 tory Birds Act?

5 A The situation, as I've
6 been able to follow it up at the moment is a little
7 bit unclear. I'm assuming that ratification takes
8 place, which I think it's probably a fairly good
9 assumption, the statement which concerns me the most
10 -- and this is a statement that Canada is apparently
11 prepared to sign and ratify as a nation -- says that

12 "Each contracting party shall take appropriate
13 action to protect the ecosystems of which
14 polar bears are a part."

15 That's a pretty serious statement, and I'm not exactly
16 sure quite, and I haven't received any indication
17 yet of exactly how the country or the government as
18 a whole intends to ensure that that particular
19 statement of the Act is in fact lived up to, or
20 even if it can be lived up to, if we are going to
21 have extensive drilling, for example, in the Beaufort
22 Sea. I think we have to get to the point where we
23 can be assured at a very high level of probability
24 that there will be in fact no damage to the ecosystem,
25 there will be no additional protection necessary; and
26 of course this applies to virtually all areas of
27 the polar bears range in Canada since so much of
28 the area is over sedimentary rock, which of course has
29 a great deal of potential for oil and drilling.

30 THE COMMISSIONER: You said

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 that Canada has already ratified this.

2 A Canada has already
3 ratified it, that's right.

4 Q And is then prepared to
5 implement it?

6 A Well, I assume, and I
7 certainly hope as a Canadian that the country takes
8 the statement relatively seriously.

9 MR. EVANS: Q Who would be
10 in charge of enforcing that treaty? I don't think we
11 actually got to the question I asked you previously,
12 but what I'm concerned about is how the regulations
13 that would implement this treaty would be promogated,
14 would they --

15 A I just couldn't answer
16 that. You'd have to ask possibly the Legal Branch
17 of the Department of the Environment.

18 Q Right.

19 A Or possibly the Legal
20 Branch of the Department of Indian Affairs, since
21 they deal with that part of the world quite a bit.
22 I really don't know how it would come into effect,
23 but it is a very strong statement. It seems to me
24 it would require some fairly serious legislation or
25 whatever to ensure that it was lived up to.

26 Q So you have no indication
27 at this time as to how or by whom it would be enforced?

28 A No, I have not.

29 MR. EVANS: Thank you.

30 THE COMMISSIONER: You are the

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 head of the Federal-Provincial Technical Committee,
2 that's a committee of biologists, isn't it?

3 A Yes, that's correct.

4 Shall I explain that to you, or do you just want to
5 go ahead with your question?

6 Q No, explain it to me,
7 that was the question.

8 A O.K.

9 Q What is the committee?

10 A Within Canada, and
11 this is, Canada has polar bears in four provinces and
12 two Territories, and the Federal Government also
13 has the responsibility for research, and the biolo-
14 gists from all jurisdictions meet every year to go
15 over all of the research that has been conducted
16 within the country, and update recommendations for
17 the management of the species on a nation-wide basis.
18 This recommendations -- the recommendations from this,
19 then go to an annual meeting of the administrators
20 which takes place in conjunction with the Federal-
21 Provincial Wildlife Conference, which deals with all
22 manner of wildlife matters throughout the country, and
23 there is an Administrative Committee for polar bear
24 research and management, and they meet and go over
25 these management recommendations based on the most
26 up-to-date research. So that, as a species on a
27 nation-wide basis, ^{it} probably has some of the best
28 management in the country.

29 That's the background of
30 the situation.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 THE COMMISSIONER: Thank you.

2 MR. EVANS: Right.

3 Q Dr. Stirling, on page 18
4 of your written testimony you make a statement that it
5 would be of great value to undertake an in-depth
6 baseline study of the population dynamics of the
7 Arctic fox. I understand that a study was undertaken
8 by the Canadian Wildlife Service and the Northwest
9 Territories Government in co-operation of a number of
10 species, including the Arctic fox at Banks Island
11 during the initiation of the period in which petroleum
12 exploration was initiated in this area. Now, I
13 believe those studies didn't last very long. Are you
14 familiar with those studies?

15 A I am familiar with
16 parts of them, as is Dr. Barry.

17 Q I might address my
18 questions to both of you then, I guess. In your
19 opinions, do you think that that study was useful
20 and do you think that it helped to establish what
21 you've stated was necessary, in your testimony
22 as far as baseline data is concerned?

23 A Well, I've never been
24 all that interested in caribou and muskox, so I'll
25 restrict my comment -- other than eating them --
26 I'll restrict my comments to the Arctic foxes.
27 There was a great deal of opportunity to gather a lot
28 of material, in fact I think a fair amount of material
29 was obtained there which might have been helpful to
30 us in looking at the importance of Arctic foxes in

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 relation to the offshore habitat. Even if that mater-
2 ial had been worked up completely, without the
3 offshore experience that Dr. Smith and I have been
4 able to accumulate between us in the last five
5 years I don't think it could have been interpreted
6 three or four years ago when those reports were put
7 together, it couldn't have been interpreted in the
8 importance that we realize it is today. Even so,
9 though, there was a lot of material collected that
10 was never ever reported on, so that we never really
11 got the full benefit of work that was done there,
12 at least on the fox.

13 Q Dr. Barry, do you have
14 anything to add to that?

15 WITNESS BARRY: There will
16 be some parts I won't dwell on. The report that
17 you speak of was put together on a basis of one of
18 two years of data; for circumstances I don't care
19 to discuss, the person that was doing it was then
20 transferred to another part of the Territories
21 with the Territorial Government and the report was
22 never completed. So that other half of the study
23 is, as far as I know, not available. It was confined
24 entirely to the land of seismic activities on Banks
25 Island.

26 Q I see. Do you think that
27 it should have been a continuing study? In other
28 words, more than just one or two years.

29 A Oh, I think so. Biolo-
30 gists are sometimes reluctant to use the term " cycle"

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 but everybody refers to cycles in Arctic fox, they
2 are usually a four-year cycle related to lemmings.
3 I think one or two years of study are a little bit
4 short when you have a species of that type. The
5 cycle is definitely lemming-related. There may be a
6 lot of connections between following polar bears and
7 scavenging on their kills related to abilities to
8 carry over from one population high, or crash to
9 the next high. That's something that would take
10 considerable thought.

11 Q I gather this is a
12 fairly delicate subject so you may not want to comment.
13 Do you have any idea why this study was cut off, why
14 it wasn't continued and made a comprehensive study?

15 THE COMMISSIONER : Where is
16 this getting us? Suppose we found out, what help would
17 it be to this Inquiry? We're not conducting an inquest
18 into why the report wasn't completed three, four, five
19 years ago. We're trying to discover the impact on
20 the environment of the proposed pipeline and energy
21 corridor, and why somebody didn't complete a report
22 on a certain species sometime ago doesn't interest me,
23 unless you can show me why I should be trying to find
24 out.

25 MR. EVANS: Well, Mr. Commis-
26 sioner, the basis for this line of questioning was
27 to show that the studies that have been done were
28 piecemeal and hadn't taken into consideration
29 all of the facts, in other words, it was kind of
30 ex post facto research after the fact, and I merely

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 wanted to establish that this was a particularly glaring
2 instance of that kind of approach, by the government.

3 THE COMMISSIONER: Well, these
4 gentlemen, a distinguished group of public servants,
5 have just completed a very important study which they
6 have characterized as incomplete, and I think I'm
7 perhaps not going as far as they did in putting that
8 label on their characterization of the report they
9 just completed themselves. The fact that there was
10 a similar kind of incident a few years ago doesn't
11 get us very far, it seems to me.

12 MR. EVANS: No, Mr. Commissioner,
13 I will drop that line of questioning. I agree with you
14 that it isn't very relevant to the matter of questions
15 here, but I did want to draw it out at least as far
16 as we've gone to show it was an area in which study
17 had been cut off for some reason or other.

18 THE COMMISSIONER: All right,
19 but Mr. Evans, we're trying to figure out, if we can,
20 what the impact of these developments is likely to be
21 on these whales, the reindeer in the delta, the fish
22 and so forth and so on. We have these gentlemen here
23 who are experts in the field, and we -- I would rather
24 that we spent our time getting their professional
25 opinions on these matters of substance rather than
26 trying to find out what happened to a report that
27 wasn't completed. These things happen in government.
28 It wouldn't come as a great shock to me if it turned
29 out that a report hadn't been completed.

30 MR. EVANS: Very well, Mr.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 Commissioner. I'll proceed with that other line of
2 questioning.

3 Q I understand that in most
4 of the tests that have been done, Norman Wells crude
5 has been used as opposed to crude from -- that would
6 be available now from the Arctic Islands or the
7 Mackenzie Delta. I wonder if any of you gentlemen
8 would like to comment on the possible reasons for
9 that and whether it would make any difference, in
10 other words whether the kind of crude is the same
11 or different, or what? Mr. Stein?

12 WITNESS STEIN: I'll make
13 a quick stab at it and hopefully somebody can
14 elaborate a little bit more. I'm not a chemist either,
15 but from what little I have heard and read on crude
16 oil they vary considerably in their chemical makeup.
17 I believe it's the aromatics and what-not that vary,
18 I don't know whether they vary -- well, presumably
19 they would vary in quantities as well. So that I think
20 any sort of toxicity work or impact related work on
21 the biology most definitely has to be related to the
22 type of product that you're likely to be encountering
23 in the area of influence. There were a couple of
24 instances within the Institute where oil-related re-
25 search was being conducted, I was only on the fringe
26 of these, and the reason for taking Norman Wells
27 crude was because it was the only type that was being
28 offered by the industry themselves. I don't know
29 whether there was some sort of an industry secret or
30 whatever, but I know that the approaches to the

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 companies by individuals involved were not received
2 very well at all. I'd say Norman Wells was the only
3 thing that was available, so they were forced into
4 that situation.

5 THE COMMISSIONER: Well, in
6 one of those experiments you used oil from, was it
7 Adgo, is that gas or oil? At Atkinson Point.

8 WITNESS PERCY: Perhaps I
9 could add something here. I think -- well, I know
10 in our studies and in a number of other studies
11 the approach that was used was as the oil that was
12 likely to be discovered offshore would probably vary
13 from any of the oils that we have available, we took
14 a range of oils and in our study we used Norman
15 Wells crude, which is a very light crude; Atkinson
16 Point crude, which is the other extreme, a very, very
17 heavy crude, and some studies have used Swan Hills
18 crude, but we tend to use Pembina, which is sort of
19 an intermediate between the two. So we had a fairly
20 wide range of oils available to use, and hopefully
21 once we get more information about what oil is
22 available in the Beaufort Sea, we can sort of see
23 where it lies within that range.

24 Q Could I just, Dr.
25 Sergeant, while Mr. Evans is gathering himself for
26 his next question, just ask you about Table 1 in
27 your testimony, and I assume there's nothing in this
28 but it says:

29 "Numbers of white whales counted in different
30 parts of the Mackenzie Delta in different years,

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 and numbers of artificial islands."

2 It's not suggested there's any correlation or any
3 cause and effect relationship, is there?

4 WITNESS SERGEANT: No, I was
5 attempting, if there was any obvious effects of the
6 number of islands, but I think basically I just put
7 the two sets of data in the same table for convenience,
8 or brevity. Really all the number of islands, and
9 I don't think the figures are complete, shows the
10 increase in rate of exploration, and these data are
11 really used elsewhere in correlation.

12 THE COMMISSIONER: Fine.

13 MR. EVANS: Q Yes, Dr.
14 Smith, with respect to the seal population, how much
15 do you think these proposed developments will affect
16 the seals? Maybe I can make the question more
17 specific. How large an area does the seal popula-
18 tion cover, and how close would this be to the
19 proposed developments?

20 WITNESS SMITH: Well, I
21 tried to indicate in my presentation that I felt that
22 the exploited seal population in the Amundsen or
23 at Holman, for example, in the Amundsen Gulf; it was
24 dependent on a much larger area than the adjacent
25 coastline. In fact, very likely the harvest from
26 that single village is dependent on a good part of
27 the south-eastern Beaufort Sea, so that just in a
28 general sense large-scale influx of people, equipment
29 and so on, is bound to have some effect on the seal
30 population but I can't give you any sort of quantitative

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 estimate of the disturbance or the effects of this
2 disturbance, and I don't think you could design an
3 experiment to really evaluate that kind of thing.
4 Movements, in my mind, the possible creation of
5 barriers to movements would be the most serious
6 thing, and we have no way at present of evaluating
7 just what a large number of oil rigs or boat traffic
8 or things of that nature, just what type of effect
9 it would have on the seasonal dispersion, re-
10 assortment of age classes in the areas that are
11 dependent on these moulting populations for their
12 annual harvest.

13 Q O.K. Now, in your
14 testimony I believe you discussed both the air holes
15 and the dens in which the seals raised their young
16 in the spring. Would the -- if there was an oil
17 spill under the ice, what effect do you think it
18 would have on the dens?

19 A Well, if the oil was
20 under the ice where the birth lair was located
21 and the oil flowed along to the point at which the
22 hole was located, then it's been shown by the
23 physicists and people dealing with the physical aspects
24 of oil distribution that this oil would come up into
25 the hole and once it had filled half of the hole
26 by volume, because of the specific gravities of oil
27 and water, the oil would then be dumped onto the
28 surface of the ice. In this case it would be dumped
29 into the birth lair and completely foul it. At that
30 point I would imagine that it would result in some

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Evans

1 mortalities, very definitely, especially in the case
2 of a helpless pup who couldn't move out of the area
3 or couldn't be moved out of the area.

4 Q So oil under the ice
5 then would gather both in the breathing holes and in
6 the birth lairs.

7 A Very definitely. There's
8 no doubt about that.

9 MR. EVANS: O.K., I don't think
10 I have any further questions. Thank you very much for
11 your help.

12 MR. GOUDGE: Sir, I've been
13 the huddle we had
14 advised since half an hour ago that because of the
15 exigencies of plane travel it would assist greatly
16 if this panel could have its cross-examination
17 completed tonight. I informally canvassed counsel
18 and they have no objection in the circumstances. If
19 you put --

20 THE COMMISSIONER: There's
21 a plane in the morning.

22 MR. GOUDGE: There's a plane
23 in the morning, sir, and if not then, not until Friday
24 night -- a plane that has seats on it. So subject
25 to what you may say, sir, if we could come back
26 perhaps at eight o'clock I think for a couple of
27 hours, that would do it.

28 THE COMMISSIONER: What time
29 is it now?

30 MR. GOUDGE: It's now 5:15.

THE COMMISSIONER: Oh, let's

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant

1 make it eight o'clock.

2 MR. HOLLINGWORTH: My consent,
3 sir, is conditional on Mr. Goudge returning to his
4 room and paring down his questions.

5 THE COMMISSIONER: Yes,
6 all right. Well, eight o'clock then, and we'll carry
7 on tonight.

8 (PROCEEDINGS ADJOURNED AT 5:20 P.M.)

9 (PROCEEDINGS RESUMED AT 8:15 P.M.)

10 MR. GOUDGE: Mr. Marshall
11 has arrived and has advised that he has one or two
12 questions, and in the usual order he could perhaps
13 proceed.

14 MR. MARSHALL: Thank you, sir.
15 I have distributed to counsel Slaney's 1975 white
16 whale study and I've left a copy with Miss Hutchinson.
17 I'd ask that that be marked as an exhibit, please,
18 sir.

19
20 I also have
21 two other reports. Unfortunately, I just have one
22 copy. I doubt there will be as much demand for these.
23 One is, 1975 Summary Report on Greenhouse Experimen-
24 tation and Seed Increase Projects"by Northern Engin-
25 eering Services, and the other is a report entitled:
26 "A Report On a Shallow Seismic Survey in
27 Three Areas of the Mackenzie Delta,"
28 1975, done by Kenting. Those will be available in
29 our office for examination by any of the parties
30 who wish to look at them, sir.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Marshall

1 CROSS-EXAMINATION BY MR. MARSHALL:

2 Q I have some questions
3 for Mr Stein. Mr. Stein, it hadn't been clear to my
4 advisors from your evidence, particularly on page 2,
5 whether or not you're suggesting that spawning took
6 place in the delta itself. I gather this is a matter
7 that may have been touched on by someone else in
8 cross-examination. I wonder if you'd just go over
9 that briefly for my edification?

10 WITNESS STEIN: We had
11 identified two areas that we feel fairly certain are
12 being used for spawning primarily by whitefish. One
13 is -- which we have mentioned in previous testimony --
14 is the mouth of the Arctic Red River, and the second
15 one is at Horseshoe Bend, which is about on the middle
16 channel about half-way between Aklavik and Inuvik.
17 Other than that, we have speculated that many of the
18 back eddies of the Mackenzie and the delta itself
19 are probably used for spawning, but we have not
20 identified anything beyond that.

21 Q Secondly, Mr. Stein,
22 there was some reference to the presence of grayling,
23 and the information I had was that in the Mackenzie
24 Delta that grayling are found very infrequently. Dr.
25 McCart had indicated to me that in their various
26 programs they admitted only a couple of grayling
27 amongst thousands of fish. Has that been your
28 experience as well? Have you information that
29 grayling are there in some numbers?

30 A More or less that has

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
C ross-Exam by Marshall

1 been our experience as well. I think actually the fish
2 that Dr. McCart referred to, I believe, were taken in
3 Moose Channel, which was rather a surprise to me.
4 Grayling in the delta in general are quite uncommon.
5 Those that do exist are primarily using the streams,
6 the smaller streams originating out of the Richardson
7 Mountains and the Caribou Hills. I suspect -- I'm
8 theorizing in my own mind -- that the fish that Dr.
9 McCart's crew took in Moose Channel probably came from
10 one of these other streams, and if they are the ones
11 that I am thinking of, they were taken during the
12 winter when the water conditions actually would be
13 quite clear, but probably were spawning and spending
14 most of the season in the streams.

15 In the delta themselves they
16 are quite uncommon.

17 Q Finally, Mr. Stein,
18 from your prepared evidence we took it that you were
19 quite concerned about any effect there might be on
20 migrating fish, and I asked you if you would take a
21 look at Dr. McCart's prepared evidence that will be
22 presented here before the Inquiry, once we finish
23 the presentation of the evidence by COPE. He dealt
24 with this question of effect on migrating fish and
25 made some recommendations that I'd like to read into
26 the record and just ask you to comment on them as to
27 whether or not you think this is the appropriate
28 sort of step to be taken as a mitigative measure.
29 His evidence reads in part as follows:

30 "We have recommended that the movements and

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Marshall

1 distribution of fish should be continuously
2 monitored during the construction period and
3 if it appears that fish migrations are being
4 affected, there should be modifications in
5 construction procedures to mitigate the problem.
6 These might include short-term shutdowns to
7 permit passage, or re-scheduling of some
8 potentially damaging construction activity
9 such as blasting so that they occur when fish
10 are dispersed rather than concentrated."

11 I was wondering, Mr. Stein, whether or not you thought
12 that was the appropriate sort of step to take as a
13 mitigative measure?

14 A I think it's basically
15 very appropriate. I would recommend that a monitoring
16 study be conducted , and it would have to be conducted,
17 I think, both upstream and downstream from the
18 operation itself before you'd really get some idea
19 of whether the fish were passing. Other than that,
20 about the only thing, there are of course going to
21 be problems with just having the fish in the channel
22 themselves. I mean they are not devoid of fish at any
23 time of the year, for that matter. But I think
24 through limited test netting you will have a good
25 indication of when the runs are beginning in earnest
26 and if indeed it appears there is a problem of blockage,
27 the other thing that would have to be monitored would
28 be any sort of fish kills below, and if it appears
29 there is a problem then a shutdown, I think, would be
30 warranted.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

MR. MARSHALL: Fine. Those
are all the questions I have. Thank you.

CROSS-EXAMINATION BY MR. GOUDGE:

Q Sir, let me begin with
you, Dr. Percy. You described in your first presenta-
tion essentially the dimensions of the threat posed
by an oil spill so far as you could tell. I take it
you're very frank to admit that there are so many
variables that making any kind of prediction in this
area is, at the best, guesswork of the highest order.

WITNESS PERCY: Any kind of
detailed predictions, I'd say "yes".

Q Yes. You recite 12
factors in your evidence which can in one way or
another affect the effect of an oil spill. Do I under-
stand your evidence to say that?

A Right, there are 12
factors, yes.

Q And because of uncer-
tainties involved in those 12, making any kind of
definitive prediction becomes next to impossible.

A Well, I think the key
point is that they are all variables and they are
all varying together, and the permutations and com-
binations possible are almost infinite. That's the big
problem.

Q Yes. No doubt, though,
you could make assumptions about the worst possible
case for each of the 12 and put that together to
get what you might call your doom's day scenario, and

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 I take it Dr. Millen has in part done that.

2 A Well yes, he's taken the
3 worst possible case, I think, for a single oil well
4 blowout.

5 Q And has worked in what
6 you would take to be the 12 factors, making the worst
7 possible assumptions for each of the factors.

8 A Not necessarily, I don't
9 think he has taken the worst possible situations in each
10 of the ^{factors.} / I think he's certainly considered each of
11 the factors in his presentation, but probably not the
12 worst possible.

13 Q Yes. If you were to do
14 that, if you were to take the worst possible assump-
15 tions for each of your 12 affecting factors, you would
16 get what for you would be the doom's day scenario.

17 THE COMMISSIONER: Well, just
18 before we go on, do you mind telling me what "the
19 doom's day scenario" is?

20 A I was just going to
21 ask that myself.

22 MR. GOUDGE: Worst case.

23 A Pardon?

24 Q It's the worst possible
25 case. You've told us there were 12 factors that can
26 go together to produce the effect --

27 A Right.

28 Q -- consequent on an
29 oil spill.

30 A One of the key factors

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 that was involved was the actual dosage of oil, and
2 a single oil well blowout, I don't think, is the worst
3 possible conceivable case. It's probably the worst
4 possible case that we have to deal with in the present
5 scenario.

6 Q And one of the ways that
7 Dr. Millen and the Beaufort Sea project measured the
8 harm caused, was in terms of time taken for the eco-
9 systems affected to restore themselves. Is that so?

10 A He made some predictions,
11 yes, as to the amount of time that would be involved.

12 Q And that's one continuum
13 along which one can measure the relative harm caused
14 by any scenario.

15 A Right. Well, this
16 business of restoration is a difficult thing to tackle
17 because you have to define what you mean by the
18 environment being restored. A good case in point
19 was the -- to cite a temperate oil spill situation --
20 was the "Tampico Maru" spill in California that I
21 referred to earlier, in which the oil was spilled into
22 a small cove, the vessel essentially blocked the cove
23 and in that situation most of the vegetation and animal
24 life in the cove was wiped out. There was a recovery
25 that occurred over the next several years, and this
26 was followed fairly closely. Initially a lot of the
27 mobile animals did move back into the situation and
28 after a while a lot of the benthic, that's bottom
29 living organisms and plants, started returning; and
30 after I think it was about seven years, at the end of

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 the seven-year period, things looked pretty lush and
2 luxurious in there. It hadn't, however, returned to
3 its original state because things hadn't regained
4 their original balance. There was a lot of the sea
5 weeds; one of the balances that exist in a lot of
6 these temperate areas are the vegetation-grazing
7 organisms which graze down seaweeds and keep them at
8 a very low level. Now, one of the unusual features
9 of this cove after it had recovered was that the
10 seaweed was extremely dense. The balance hadn't
11 returned between these grazing animals and the vege-
12 tation. The animals hadn't had a chance to sort of
13 graze it back down to normal levels and the vegeta-
14 tion was in fact preventing the animals from re-
15 settling and sort of -- and so it was an out of balance
16 system relative; so it hadn't returned to an original
17 state but it had pretty well recovered to all intents
18 and purposes.

19 Q There's no doubt --

20 A But this is after
21 seven years.

22 Q Yes. There's no doubt
23 that the Beaufort Sea project, at least as it culmin-
24 ates in Dr. Millen's stated case, uses "return to normal"
25 in quotations as a criterion for measuring relative
26 impact of an oil spill.

27 A Right.

28 Q Now that being so, he
29 uses the time frame of approximately ten years for
30 his scenario.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 A Yes. Again you're still
2 caught up with this problem of what do you mean
3 exactly by "normal"? I think probably the -- it
4 all boils down to this division that I had before of
5 looking at the aquatic system as a series of components.
6 It's not one uniform system. The water column itself
7 probably would clear itself simply by, if it was
8 just a single spill we were dealing with, probably it
9 would clear itself of water reasonably rapidly over
10 you know, a year or so.

11 THE COMMISSIONER: It would
12 clear itself of water?

13 A Of oil, the hydrocarbons,
14 simply by the fact that they are gradually dispersing
15 and moving into other areas and becoming so diluted
16 as to be ineffective; but then most of the animals
17 that are living in this water column are highly mobile
18 animals and assuming that you've got outside stocks
19 of these animals, the water is a dynamic system, it's
20 moving continuously all around, these animals are
21 going to be moving back into the area. The water
22 column, I would think, could recover reasonably
23 rapidly. The bottom is a totally different matter
24 simply because you've got this -- these hydrocarbons
25 in the sediment and once they are even in temperate
26 waters, indications so far have been that they are
27 there for extremely long periods.

28 MR. GOUDGE: Let me ask you
29 this then. Dealing with the ecosystems or those
30 parts of the Arctic marine ecosystems that you

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 specialized in, and taking Dr. Millen's scenario of
2 the one-shot blowout, is ten years a fair figure for
3 those parts of the ecosystems to restore themselves?

4 A Which parts are you
5 referring to now?

6 Q The parts that you
7 particularly devoted your attention to and which you
8 testified about.

9 A Well, we were looking
10 at both the water column and the bottom sediments, the
11 benthic sediments, that's correct; and as I said,
12 the water column could probably cleanse itself much
13 more rapidly than the bottom sediments, and would
14 probably --

15 Q Is ten years an outside
16 limit for the bottom sediments?

17 A I'd say to completely
18 -- if you want to get to the situation where the
19 bottom sediment has freed itself of oil , and this is
20 one of the difficulties, we don't know what the
21 effect of long-term exposure to this oil has on these
22 animals, and after ten years I don't think the bottom
23 sediments are going to be free of oil. The stuff is
24 still going to be there, but we don't know what
25 effect these low levels, long-term low level effects
26 are.

27 Q Dr. Millen's ten-year
28 restorative process, as far as your part of the
29 ecosystem is concerned, is not long enough. Is that
30 what you're telling us?

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 A Well, it could be an
2 average figure, I'd say, if you're looking at the
3 water column which would restore itself or cleanse
4 itself in a short time, the benthic situation which
5 would cleanse itself in a much longer period of time;
6 ten years might be sort of an average ball park figure
7 for the sort of median.

8 Q I take it the implica-
9 tion of what you're telling us is, though, that you're
10 simply not sure how long it would take. It might be
11 ten years, it might be more, it might be less.

12 A Yes. Part of the
13 difficulty that I'm having is that we're just not
14 sure how readily the Arctic ecosystem can in fact
15 cleanse itself of oil, because this is one of the
16 key factors, is the rate at which the ecosystem can
17 in fact handle the oil and degrade it and get rid
18 of it.

19 THE COMMISSIONER: Do you
20 have -- I thought the burden of your evidence and
21 Dr. Grainger's was that you had a situation in the
22 Arctic, there's no precedent for. You have the ice
23 cover, which results in two things. It may prevent
24 you from drilling a relief well for as long as a
25 year or even two years so that you would, if you had
26 a blowout, have one that might keep going for a year
27 or two years, which is a factor that contributes to
28 a very bad situation, and then you have the oil
29 held under the ice with -- you explained that you
30 were concerned about the impact on the diatoms that

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 grow on the sort of upside down sea bottom under the
2 ice, and you were concerned, too, as I understood it,
3 that it wouldn't be dispersed because it was being
4 held under the ice. But my impression was that that
5 ice cover contributed in two very special ways to a
6 situation that there was no precedent for. One is, you
7 don't know if you can get in there and drill a relief
8 well, or at least you're worried that you can't for
9 a year or even two years, which means the dose is
10 going to be terrific.

11 A Right.

12 Q And secondly, you have
13 this under the ice environment and the damage to it
14 specifically, and then the effect of the ice insofar
15 as dispersal of the oil is concerned. You have no
16 precedent for any of these situations. I'm not trying
17 to say that's all you told me, you told me much more,
18 but isn't that one of the -- that's the main, that's
19 the core of what you're concerned with, isn't it,
20 as far as this blowout thing is concerned?

21 A Right. Basically what
22 we're trying to do is to use information that has
23 been accumulated in the temperate ecosystems and what
24 we have managed to accumulate in Arctic ecosystems, and
25 put the two together and come up with some sort of
26 an extrapolation.

27 Q Yes, and it isn't easy.

28 A No, considering all the
29 variables involved.

30 Q But I am right, I take it,

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 in saying that nowhere on earth has anyone had to cope
2 with a blowout where there is ice cover restraining you
3 from drilling a relief well and contributing itself
4 to the impeding of the dispersal of the oil.

5 A No.

6 Q Maybe it's getting late
7 and I'm not making any sense, but without having read
8 over your evidence, and Dr. Grainger's and yours were
9 dove-tailed and I can't remember now exactly where
10 yours ended and his began, and then his ended and
11 yours began again; so --

12 A Well, yes, this is
13 basically the whole problem. In temperate waters we've
14 had a lot of oil spills that have been monitored quite
15 intensively, and even with this background information
16 there's still a lot of questions and as you say, in
17 the Arctic we just haven't -- or in any waters we
18 haven't had this type of situation.

19 MR. GOUDGE: Q One thing that
20 has interested me, Dr. Percy, is there is a lack of
21 precedence, you acknowledge that readily. Why wasn't
22 it part of your project to conduct an oil spill under
23 controlled circumstances to see what bio-degradation
24 took place in at least a relatively long time frame of
25 one or two years? Why didn't you do that?

26 A When the Beaufort Sea
27 program was set up, it was in fact a one-year program.
28 The only reason they extended it into a two-year
29 program was the fact that we had such foul ice condi-
30 tions that first year and I hardly think one year is

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 an adequate time frame to conduct this type of experi-
2 ment, and I'm rather dubious and I know a lot of people
3 are rather dubious about any of these natural oil spill
4 situations. I think if they are going to be carried
5 out at all, they need an extremely long period of planning.
6 You need to get a great many people involved so you
7 can get as much information as you possibly can, because
8 at the moment we're frequently finding ourselves in
9 situations where people operate these -- run these
10 oil spill experiments to get information that they
11 want; someone else comes along who would like some
12 information and they want to run another oil spill
13 experiment. We're just getting, you know, ideally
14 these things should be run as co-operative efforts and
15 it needs quite a bit of pre-planning, I would think.

16 Q Given the pre-planning,
17 it would be a desirable research technique?

18 A Yes, I think they can
19 yield valuable information.

20 Q Well, once a spill
21 occurs, you --

22 A Another point, too, is
23 there was a small under-ice spill done in Balaena Bay.
24 It wasn't an ideal situation for observing biological
25 effect because it was a very enclosed bay and I
26 gather that it wasn't a particularly biologically rich
27 bay, and the oil was put under there primarily to
28 examine the effects on ice, what the oil was doing
29 to the ice as it moved up through the ice and this
30 type of thing, and in fact this is where we got some

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 of our samples that we did use in some of our toxicity
2 tests, the oil that had been under the ice for six
3 months that I quoted earlier on, the fact it hadn't
4 lost any toxicity after being under the ice that period
5 of time. But when permission was given for this
6 oil spill to occur, it was made quite clear that it
7 was going to have to be cleared up in the earliest
8 possible time, and in fact I gather there was an oil
9 spill cleanup crew went in to sort of do a practice
10 cleanup job on it.

11 Q Yes. Let me move then
12 to that aspect of the matter because once a spill
13 occurs, there's no doubt something has got to be
14 done about it, and Mr. Stein, you gave us some
15 indication of the kinds of things that could be done.
16 I take it, dispersing is one way of dealing with an
17 oil spill once it takes place. Sinking is another,
18 and I suppose you could burn it or mop it up or con-
19 fine it. Are those the kinds of things that occur to
20 you as ways of dealing with an oil spill?

21 WITNESS STEIN: Not entirely,
22 no. I certainly wouldn't be in favor of the use
23 of any sort of dispersant or sinking agent.

24 Q Well, nonetheless that's
25 been used. It was used in the "Torrey Canyon" incident.

26 A Yes, it has been.

27 THE COMMISSIONER: Yes, but
28 all of these witnesses said they were in favor of
29 confining any cleanup to mechanical means. I think
30 everybody agrees with that, at least those who discussed

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 it.

2 MR. GOUDGE: Let me see if I
3 understood that correctly.

4 Q Are there any circum-
5 stances where any of you, and perhaps Dr. Barry, I
6 could start with you, would opt for other means besides
7 mechanical cleanup? I'm thinking in particular of the
8 risk that might be run by allowing any oil to stay
9 on the surface of open water. Would there not be
10 circumstances where you might find dispersing to be
11 preferable to a rather inadequate mechanical cleanup?

12 WITNESS BARRY: I can't see that
13 dispersing would be helpful, but for a temporary mea-
14 sure, considering the logistics of trying to get
15 equipment of a type that's envisioned out onto the
16 pack ice or what have we, of some temporary means,
17 scaring devices are available. I'm speaking entirely
18 of birds at this time; for scaring birds off --
19 exploders, automatic exploders, things like that
20 which you could probably get out there quickly by
21 helicopter and things like that. I'm assuming an
22 oil spill 35-40 miles offshore. That might work,
23 although most of things like eider ducks and the type
24 of species involved that are seldom hunted and are
25 not scared too much by exploders, although that is
26 something we would have to investigate.

27 A proposal I've heard
28 bandied around -- I think it stems from the Syncrude
29 project but I'm not sure -- is the idea of coating
30 -- covering the oil with something that makes it not

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 look like oil or water, in other^{words} some kind of a white
2 foam that would make it look like snow or ice, and
3 as far as birds are concerned they would probably
4 find it unattractive to land in. This is being inves-
5 tigated at Mildred Lake, I think that is the name of
6 the big tailing pond or whatever is involved at
7 Syncrude in Northern Alberta where this type of
8 problem is going to be facing them very soon, a very
9 large area with hydrocarbon contaminants.

10 The state of the art, as far
11 as developing some kind of a thing to -- you might
12 say to pollute the oil, either cover it with some
13 kind of a foam, I would think that would look like
14 snow or ice or be unattractive to birds, is one
15 possibility, as a very quick thing. But/^{the}chemistry
16 and everything involved in that, I have no knowledge
17 of whatsoever.

18 Q Are you aware of any
19 techniques that involve non-toxic dispersants or are
20 all dispersants toxic and therefore undesirable from
21 your point of view?

22 A I'm not familiar with
23 dispersants.

24 Q I wonder, Mr. Stein,
25 if you have any knowledge of dispersants, as you seem
26 very adamant that they not be used. Is it because
27 they're toxic?

28 WITNESS STEIN: Well, again
29 I'm not that much of a toxicologist, but that's the
30 general understanding that I have, yes.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 WITNESS PERCY: Can I add
2 something on that perhaps?

3 Q By all means.

4 A There are certainly what
5 ~~are~~ considered low toxicity dispersants. In fact this
6 Corexit: that has been quite extensively used is a low
7 toxicity dispersant, and in fact it's rather interest-
8 ing that although the American approach to oil cleanup
9 has been to develop slick-lickers and all sorts of
10 sophisticated equipment, they've certainly pushed the
11 equipment; the British approach has been towards dis-
12 persants, primarily I suspect because they seem to
13 value their beaches very very highly, and they wanted
14 anything that will keep the oil away from the beaches
15 is very important. So they have intensively worked
16 on this dispersant problem and they have got some
17 low toxicity dispersants. But the problem is the oil
18 itself is toxic, so no matter how low toxicity your
19 dispersant is going to be, you get to the point where
20 the toxicity is not the dispersant, it's the oil
21 itself.

22 Q As I understood the
23 thrust of all your evidence, your concern with the
24 use of dispersants was with the toxicity of the
25 dispersant rather than with the result of using the
26 dispersant; is that right?

27 A No, no, I think the
28 indications are now that there are certainly low
29 toxicity dispersants. Some of the first generation
30 dispersants such as the ones that were used in the

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 "Torrey Canyon," were extremely toxic and this turned a
2 lot of people away from dispersants. But dispersants
3 do have a place, I think, and this is the problem.
4 You have to -- I don't think you can set up any spec-
5 ific cleanup program ahead of time. You have to look
6 at the situation as it's occurring. This is a discussion
7 I've had with a lot of the E.P.S. people concerned
8 with cleanup, and some of the M.O.T. people.

9 Q So your position, Dr.
10 Percy, would be that you'd have to have in your
11 arsenal of cleanup weapons, dispersants, among other
12 things, mechanical devices as well, and so on.

13 A I think there are
14 probably situations where an oil slick heading towards
15 a very sensitive area, you'd want to avoid it getting
16 to that area under any circumstances. In that sort of
17 situation I suspect the limited use of dispersants
18 might be justified.

19 Q Mr. Stein, are you
20 still in the position of avoiding dispersants at all
21 costs?

22 WITNESS STEIN: Well, in
23 light of what Dr. Percy has just stated, I can see
24 where there would perhaps be a need; but it's still
25 my opinion that mechanical means should be the first
26 holus-bolus if it is at all possible.

27 Q Yes. I take it you
28 would all agree that there is no doubt even mechanical
29 means cannot put us back to normality in the sense
30 that an oil spill always yields some very substantial

1 damage. Dr. Barry, from the birds' point of view
2 there's no doubt about that? Is that so?

3 WITNESS BARRY: M-hm, yes.

4 Q Now, that being so,
5 would any of you disagree with the proposition that
6 prevention rather than mitigative measures after the
7 fact is of over-weaning importance when one is
8 dealing with an oil spill? Dr. Percy, would you have
9 any disagreement with that proposition?

10 WITNESS PERCY: You mean
11 prevention of the oil spill in the first place?

12 Q Yes, taking steps to
13 do what is humanly possible to ensure no oil spill.

14 A Yes, obviously that
15 would be the most appropriate approach.

16 Q Now, Dr. Grainger, let
17 me come to you in terms of the actual work that was
18 done in the Beaufort Sea project. Can you tell me
19 what the level of funding was for the research over
20 the two years that it took place?

21 WITNESS GRAINGER: To
22 conclude what work?

23 Q Particularly the work
24 in the areas that you and your people were concerned
25 with.

26 A Let me think for a
27 moment.

28 Q Yes.

29 A I don't think I could
30 be sure enough to give you a truly good figure here.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 Q There's no doubt that
2 it was a substantially larger figure than the same
3 figure for preceding years for that study area.

4 A Yes, that's quite true.
5 We simply weren't working in that area in that kind
6 of thing in preceding years.

7 Q How would it have com-
8 pared with the resources available for the study in
9 your particular part of the Eastern Arctic?

10 A It represented a
11 substantial increase in funds available.

12 Q Now, all of you, and
13 you in particular, Dr. Grainger, have outlined the
14 kinds of studies that you would like to see done from
15 here on. If you assumed the same level of funding
16 in your area, as existed in 1974 and '75, how many
17 more years would we be talking about?

18 A I would hesitate to
19 put a precise figure on that. Certainly for one
20 level of achievement, at the rate of work done formerly,
21 I would think of minimally five to ten years in order
22 to get at a number of basic points.

23 Q So it would be five to
24 ten years at the two-year level we've experienced over
25 the last two years.

26 A Yes, in very generally
27 expressed terms.

28 Q Yes, and I take it that
29 that level of research over five to ten years would
30 allow you to be reasonably confident to make predictions

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 of impact.

2 A I think it would allow
3 us to have a great deal more confidence than we have
4 at present.

5 Q Yes, and you would be
6 satisfied with that level of knowledge?

7 A I can't say that I
8 would. I really don't have sufficient confidence in
9 what we would really have at the end of this time.
10 We would certainly again be much closer to satisfaction.

11 Q Yes. One of the parti-
12 cular areas --

13 THE COMMISSIONER: Excuse me,
14 Dr. Percy?

15 MR. GOUDGE: Oh, sorry.

16 WITNESS PERCY: Just to
17 give you some indication of the type of thing we're
18 talking about, I alluded earlier to this American
19 Beaufort Sea program which is currently under way,
20 which is a four to five-year program, and it involves,
21 judging from the format that I've seen, quite a larger
22 group of people than were involved in the Canadian
23 Beaufort Sea program and they categorically, at the
24 beginning of the program, stated that what -- the
25 information they would get, would be on short-term
26 impacts. There would be no information whatsoever on
27 chronic effects, long-term effects and sub-lethal
28 effects. They were just in this four to five-year
29 period looking at short-term impacts.

30 Q To be complete, Dr.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 Percy, that study involves a gigantic geographical
2 area, does it not? It extends not only along the
3 North Coast of Alaska but right around into Cook
4 Inlet?

5 A Right, it does involve
6 a larger area.

7 Q A much larger area
8 than the Beaufort Sea project.

9 A Right.

10 Q And that's a very
11 fundamental factor in determining the number of
12 studies and so on that would be necessary.

13 A Right, that is a
14 significant point, but there are certain studies that
15 are applicable to most of the areas, like a lot of
16 the toxicity studies. You know, certain studies are
17 applicable to all of them, I would say, although there
18 are certain ones that are specifically geographically
19 oriented, yes.

20 Q Well, Dr. Grainger, one
21 of the studies that you put at the top of your list
22 as being necessary is a study of bio-degradation under
23 the sea ice. I take it the Beaufort Sea project en-
24 gaged in no research in that particular area.

25 WITNESS GRAINGER: In that
26 particular area, no; it did give the first research
27 opportunity on bio-degradation from that geographical
28 locality and in fact from northern cold waters in
29 general, you know, on our continent. But it didn't
30 allow us to get that particular point.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 Q Yes. In your particular
2 area, that is something that could be accomplished,
3 that study program is something that could be accom-
4 plished in a five-year or ten-year spectrum that
5 you cite?

6 A Well again, I think a
7 truly good crack at it could be had in that period
8 of time.

9 Q One of the problems that
10 you referred to as inhibiting the studies that were
11 made by your project were the weather problems in
12 1974 and again in 1975. Is that correct?

13 A There were problems in
14 both years, yes.

15 Q I understood you to --
16 I understood your description of the '74 problems.
17 What were the weather problems in the summer of '75
18 that caused you difficulty?

19 A They were problems of
20 ice distribution and --

21 Q Where the ice happened
22 to be?

23 A -- where the ice
24 happened to be when we also wanted to be in the same
25 localities; we weren't able to reach them. This was
26 partly a consequence of having availability -- at
27 least a vessel available for a very short period of
28 time.

29 Q And Dr. Barry, you go
30 back ten years, I take it, to 1964, for an equivalently

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 poor summer, or perhaps an even worse summer, as I
2 think you said.

3 WITNESS BARRY: As far as
4 ice conditions were concerned, yes. '64 was worse
5 than '74. '59 was the worst of all, as far as my
6 experience is concerned.

7 Q So that your experience
8 has seen three very severe summer ice conditions over
9 a 17-year period, is that so?

10 A Yes, they are all
11 relative. '75 was bad for some operations and some
12 distributions of ice, but I wouldn't consider it all
13 that bad from my particular standpoint.

14 Q Yes, Now I know you're
15 not a meteorologist, but you've been here a long time.
16 Is the time frame of three in 16 years, three bad
17 summers in 16 years something we can rest any weight
18 on? Is that a normal kind of bad ice probability?

19 A Oh, I suppose so,
20 you can get two bad years in a row and things of that
21 sort. I imagine -- I don't know if there is a
22 cycle to ice conditions, but ice forecasting are
23 much more sophisticated than they were even ten years
24 ago. The meteorologists and climatologists are
25 indicating a change in general conditions that may
26 crop up that we may have more than one bad ice year
27 in a row, in quite a time period.

28 Q Dr. Percy, to come
29 back to you at page 11 of your first presentation
30 you catalogue a number of ways in which adverse

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 effects on organisms can be described, and one of those
2 you recite No. 8, is the "incorporation and possible
3 concentration of carcinogens and other potentially
4 toxic compounds in the food chain." In the Arctic
5 marine ecosystem, is it your experience that oil and
6 hydrocarbon products get passed up the food chain?

7 WITNESS PERCY: In the Arctic
8 ecosystem we have absolutely no information on that.

9 Q And you're not prepared
10 to speculate?

11 A Well, that particular
12 aspect, I would imagine that the overall situation
13 would be similar in most food chains. I mean there
14 are certain, although there are differences between
15 Arctic food chains and temperate food chains, there
16 are certain similarities and I suspect --

17 Q What happens in temperate
18 food chains?

19 A Even there it hasn't
20 been thoroughly analyzed, but it is known that the
21 compounds, certain compounds in the oil can accumulate
22 in lipids, in certain organisms, and that other
23 organisms that feed on these organisms can pick up
24 this material. One of the uncertainties is it's
25 not precisely known what happens to this material
26 once it gets into the organism, whether it remains
27 in the same form, whether it's transformed into a
28 slightly different form or what, but it is known that
29 the material, basic material is reasonably stable and
30 can be passed along.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 Q It isn't like mercury,
2 though, that is oil is not like mercury, it does not
3 get passed up the food chain and concentrate as it goes?

4 A Indications at present
5 are no, well, there is very little information to go
6 on even in temperate waters. In fact as far as I know
7 there is only one study that has been done by some
8 people at St. Andrews, New Brunswick, and the indi-
9 cations there was that there was not a concentration
10 as you went up the food chain, no.

11 Q And you'd have no reason
12 to think it was any different in Arctic marine eco-
13 systems.

14 A I have no reason to
15 think it would be any different, no.

16 Q Now, you refer at page
17 12 of that part of your evidence to the shift that is
18 presently being made in attention by pollution biolo-
19 gists from a study of lethality, as you call it, to
20 the study of sub-lethal effects and behavioural
21 responses, and I take it you imply that we may find
22 that sub-lethal effects and behavioural responses
23 turn out to be of even greater importance than the
24 actual lethal effects.

25 A Yes. What I was getting
26 at here was that in pollution studies up until fairly
27 recently the -- this 50% lethality business is LC-50,
28 determined from a 96-hour exposure, in other words
29 this is a concentration of the compound, be it oil or
30 whatever pollutant, concentration of this compound that

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 kills 50% of the animals in a given time period.
2 This is a standard figure quoted with great reverence
3 by pollution biologists, I might add, and usually
4 in water quality control situations, what was done was
5 to take this figure and arbitrarily say, "Well, O.K.,
6 we'll set the limit at 10% of that," or some arbitrary
7 figure. There was no ecological, no biological reason
8 for setting this other than the fact it was a nice
9 figure and it seemed as though it had a little safety
10 margin. But it's becoming increasingly clear that
11 it may not be enough of a safety margin and it's
12 unrealistic because it's just an arbitrary figure and
13 so people are now starting to look at some of these
14 sub-lethal effects not only with oil, I might add,
15 but with most pollutants, and trying to look at some
16 of these effects that make up this so-called response
17 syndrome where you've got a whole series of potential
18 effects that are occurring, apart from instantaneous
19 death to the organism.

20 Q And while I take it
21 there's no evidence yet, your concern is that ultimately
22 it may be proven that the sub-lethal effects are of
23 an even greater impact than the lethality.

24 A Well, when I say "greater
25 impact", simply because of the fact that they are
26 occurring at much, much lower concentrations and so
27 they could certainly occur over a wider area and
28 also there are fairly insidious effects, and you may
29 not really realize they're occurring. You'd eventually
30 end up with a situation where you'd suddenly notice

Percy, Craininger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 that a species is missing from an area and you'd sort
2 of wonder why. This is the type of effect that I'm
3 talking about, these sort of long, slow long-term
4 effects.

5 Q Now, Dr. Sergeant,
6 let me move to you. Just grab a microphone. I
7 took it from your introduction that you, sir, have
8 been studying white whales since 1951, is that
9 correct?

10 WITNESS SERGEANT: '55.

11 Q '55, so that you have
12 what, 21 years of experience in studying the white
13 whales.

14 A Yes, intermittently.

15 Q Has it been your only
16 area of specialization in that time?

17 A No sir.

18 Q It's been your primary
19 area.

20 A No, it's been one of
21 two or three.

22 Q And --

23 A In terms of sea mammals.

24 Q And you will perhaps be
25 too modest to admit it, but I am informed that there
26 would only be one or two people in the whole of Canada
27 that would have the knowledge of white whales that
28 you do.

29 A Yes. Paul Brodie has done
30 a lot of work and he has worked also in this area

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 one year.

2 THE COMMISSIONER: Dr. Hoek,
3 would he be the third?

4 A He has a lot of
5 observations. We've been working together.

6 MR. GOUDGE: But it's an
7 area of high specialization and there are relatively
8 few of you in it.

9 A Yes.

10 Q One of the problems,
11 as I understand it, from both your evidence and that
12 of Mr. Webb, is that whatever we may know about numbers
13 and counts and so on, very little is known about the
14 effect of disturbance on white whales.

15 A Yes, I think it's a
16 reflection of our lack of knowledge of their behaviour
17 and the meaning of some of these concentrations.

18 Q Before I come to that
19 in detail, though, you've made a number of comments
20 on the Slaney studies which relate primarily to the
21 counting of the animal; is that so?

22 A We seem to have been in
23 good agreement in studies of this kind.

24 Q Yes, insofar as their
25 studies concentrate on numbers and movements and
26 kills, I take it in general terms you concur.

27 A Yes, they have done
28 more detailed studies than we have done in this field.

29 Q Yes. There is, however,
30 as I understand it, perhaps some difference between

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
C ross-Exam by Goudge

1 you as to disturbance effects.

2 A As far as I can interpret,
3 both our and their reading, we have established
4 correlations about positive and negative disturbance,
5 a number of natural variables such as ice condition,
6 the river flow and so on, and with these variables
7 it is not possible from the correlations to draw any
8 firm conclusions. They didn't do so and we haven't
9 done so.

10 Q Well, let me ask you
11 about one area. It relates to a kind of anecdotal
12 set of circumstances. The Churchill River-Seal River
13 discrepancy that you testified about; now I under-
14 stood you, I think, to say that what we now see at
15 Churchill River is indicative of calving areas moving
16 in response to human activity.

17 A This is an inference
18 deduction which we don't have the time series to
19 prove out.

20 Q Yes. There is the one hard
21 piece of evidence, though, that you refer to which is
22 at some time in the past, and I've forgotten the date
23 and you perhaps might refresh me, there was a sanctuary
24 proposed for the mouth of the Churchill River because
25 it was a calving area.

26 A That's correct.

27 Q When was that?

28 A 1950.

29 Q So something has
30 happened between 1950 and today which would make it

Percy, Grainger, Barry, Stirling
Smith Stein, Sergeant
Cross-Exam by Goudge

1 pointless to make Churchill a calving area now.

2 A I think it has certainly
3 reduced in that capacity, yes.

4 Q Well, there would be
5 no suggestion that it should be made a calving
6 sanctuary today.

7 A The ordinance, I think,
8 still remains. It merely prohibited hunting in that
9 section of the river because calving animals were
10 there. I cannot say that we have thoroughly investi-
11 gated the numbers of animals there.

12 Q But isn't it so that
13 there is virtually no suggestion that it's used for
14 calving now?

15 A There are lesser
16 numbers there than in the Seal River.

17 Q They appear simply to
18 be feeding rather than calving.

19 A Yes.

20 Q And that suggests that
21 something has happened over that 25-year period to
22 make Churchill River no longer a calving area.

23 A I think that is possible
24 yes.

25 Q Well, it's certain.

26 A We haven't done any
27 quantitative work of that kind to test that out, but
28 it's certainly a possibility.

29 Q Yes, and there would be
30 no other explanation for it ceasing to be a calving

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
C ross-Exam by Goudge

1 area but the human activity that's occurred in the
2 25-year intervention.

3 A That's the only activity
4 that could have reduced calving, yes.

5 Q Now, Slaney on the
6 other hand, and you're familiar with their work, as
7 I understand it, looks to Churchill to say,

8 "Whales can tolerate the presence of human
9 activity."

10 A M-hm.

11 Q Isn't their proposition
12 though, that whale feeding can withstand the
13 presence of human activity?

14 A That is correct. I
15 draw a distinction between these two kinds of groups
16 of whales, the moving ones and the ones that are
17 more or less stable for some weeks, such as the
18 calving groups.

19 Q And there's no doubt
20 in your mind at least that at calving time whales
21 are in their most sensitive condition as far as --

22 A I suppose so, yes.

23 THE COMMISSIONER: Well,
24 everything you have learned leads you to believe so.

25 A Yes.

26 Q Is that --

27 A We have experimentally
28 thrown stones upstream of a calving group and found
29 that one skipped stone is enough to cause them to move.
30 That's the kind of evidence, but it's dramatic.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

MR. GOUDGE:

1 Q It's incidental, that
2 is it doesn't relate to any kind of coherent field
3 work, so to speak?

4 A We haven't done intensive
5 sort of controlled studies on these, as I indicated in
6 proposals for future research.

7 Q Yes. Now, Mr. Webb was
8 with us two weeks ago and he offered some comments on
9 his view of the effect of disturbance on whales, and
10 let me just put them to you and get your reaction, if
11 I might. He indicated that -- I don't know if you
12 have the transcript -- if you just look at page 17668,
13 Mr. Webb was asked there to comment on at the bottom
14 of the page the apparent response of whales to aircraft
15 movement, and he says there:

16 "The response is not a very serious one, in
17 fact you could fly over them at 150 feet and
18 they would respond very locally but wouldn't
19 leave the area at all."

20 Do you have any comment on that as being an accurate
21 reflection of the response of whales to aircraft
22 activity?

23 A I haven't studied it
24 closely , but I'm quite convinced that they respond
25 far less to airborne sound than to waterborne sound.

26 Q Yes, but you wouldn't
27 have any fundamental disagreement with the reaction
28 that Mr. Webb --

29 A I think that's a fair
30 statement.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

Q -- recites. Then he
talks about boat traffic later on on page 17669 and
says that, at line about 12,

"Without getting a series of quantitative
data it was our impression that whales
could recognize the outboard motors and
distinguish outboard motors and associate
that with hunters."

Would you concur with that?

A I could well imagine
that if the outboard motor has a higher pitched sound
than the other type of -- I really don't know the
type of sound frequency involved in jet boats, for
instance, but I suppose tugs and barges have generally
lower frequency, lower R.P.M. motors and so on, it
would seem quite possible for whales to distinguish;
and of course these are mammals and they can learn
quite rapidly what is dangerous.

Q And Mr. Webb was asked:

"What would the reaction be on hearing then
the noise of outboard motors?"

And the answer was:

"Wherever they were within earshot, and that
could be some miles away because their hearing
is quite acute under-water, they would turn
and move out into deeper water, something in
the magnitude of eight to ten fathoms."

Once again, do you have any comment on that as an
accurate statement, of their reaction to outboard
activity?

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 A Sounds a wise move.

2 I think they could do it.

3 Q Is it the kind of
4 experience that you've noted, or do you have any
5 experience in this particular area?

6 A Oh yes, we've been
7 involved with experiments in driving animals with
8 outboards. Clearly they moved away from us. We got
9 them into shallow water that way.

10 Q Then on the next page,
11 17670, he was asked about the reaction that he was
12 able to detect of whales to the suction dredge and
13 he answered that:

14 "It didn't have an observable effect on the
15 distribution. In fact some period after
16 operation the whales were seen within less
17 than half a mile of the dredge."

18 Do you have any experience of your own that would
19 confirm or qualify that?

20 A On the aerial observations,
21 and I think we would agree on the sort of distance
22 they would be displaced; I can't find that piece --
23 670?

24 Q Yes, it's at line 24.

25 A I was reading order of
26 half a mile to a mile for displacement from boats
27 around the islands from our own observations, which
28 seems to be in general agreement.

29 Q Of that order of magnit-
30 ude. Now, you've expressed your concern about the

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 white whales in terms of the reserve concept that you
2 propose. I take it your basis for the concern is --
3 well, let me ask you, there is no, as far as I understand
4 you to say, there is no threat to the white whale as
5 a species if there is a disruption of the calving in
6 West Mackenzie Bay, obviously no threat to the
7 species.

8 A It would be a threat
9 to the stock.

10 Q It maybe a threat to
11 that population.

12 A Yes.

13 Q Yes, and you say if it
14 continued the population could ultimately die out.

15 A If calving were disrupted
16 seriously annually.

17 Q How many years would
18 it take of disruption for there to be an irreversible
19 effect on the population?

20 A If the disruption were
21 the only effect, there are about 25-year classes of
22 whales involved in reproduction, so that it would take
23 some years for one to detect an effect. But of course
24 a decline produced by a number of years' disturbance
25 would then produce a very slow recovery again because
26 the species is long-lived and slowly reproducing.

27 I don't know whether this is the point to bring this
28 in, but I think what we're talking about is a synergis-
29 tic or a combined effect. Supposing, let us say,
30 as seems possible, I think you maybe want to question

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 me on this, that the balance of hunting and reproduction
2 is a fairly close one, which is possible, then of course
3 we're talking about addition --

4 THE COMMISSIONER: Under the
5 present state of affairs.

6 A Yes, before the
7 beginning of the oil industry.

8 Q Right.

9 A Then we're talking
10 about what is additional, and you can't consider these
11 things in isolation. Also obviously what my main
12 concern is is the exponential increase in activity
13 which of course I can't foresee in detail about
14 spacing of islands, numbers of vehicles involved, and
15 so on, simultaneously over the large area of the
16 delta. That is the root, I think, of my concern.
17 We are adding to the hunting all these other distur-
18 bances on an increasing scale.

19 MR. GOUDGE:

20 Q Let me come back to the
21 assumption you began with, that is the balance of
22 hunt versus addition to the herd. Is it your view
23 that a herd of approximately 5,000 is about now in-
24 balance, given the present level of hunting?

25 A Yes, a quick calculation
26 suggests if these are 5,000 reproducing animals, and
27 one-half of them were female, which is an assumption,
28 and the calving rate is 6%, which I recollect is
29 about right, the yield should be about 150. But of
30 course we don't know the sex ratio here, there might
be more females than males, and my numbers are also

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 possibly minimal.

2 Q Yes, but if your
3 mathematics is right, then the kill of 200 that you
4 and Slaney postulate is very near the threshold
5 beyond which the herd size would be reduced over
6 time.

7 A I don't think it's
8 excessive, on the imperical evidence that this order
9 of magnitude of hunting has continued since the 1930's
10 with apparently no adverse effects

11 Q But just so I'll be
12 sure I understand it, is it your position that the
13 present state of affairs is as you postulate, virtually
14 in balance, if you take hunting on the down-side and
15 reproduction on the up-side.

16 A Yes, in 1930, R.M.
17 Anderson recorded^{almost} identical size of hunt, and
18 although the numbers I don't know at that time, clearly
19 have not diminished in any serious way.

20 Q Now, I take it one of
21 your concerns in advocating as a protective measure
22 the reserve concept is, in addition to the preservation
23 of the population, that the population is as well a
24 resource base.

25 A Right.

26 Q And Dr. Millen, I think,
27 has said that the value of the resource base is
28 approximately \$5,000 a year. Are you familiar with
29 that?

30 A I have seen an economic

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 study which pointed out, but it is of course difficult
2 to put monetary terms into a commodity that is not for
3 the most part offered for sale. So I won't comment
4 on the monetary figure.

5 Q I see. You have no
6 information which would allow you to pass on the
7 the
8 validity of/\$5,000 figure suggested by Dr. Millen.

9 A I haven't taken careful
10 note of the figure, that I have seen.

11 Q Now, besides the --
12 THE COMMISSIONER: Excuse me,
13 5,000 a year for what?

14 MR. GOUDGE: Well, perhaps
15 I'll just put it on the record, sir. I could read
16 the quote and get the same answer from the witness.
17 But it will at least allow everyone to know what
18 I'm talking about. I'm reading from Dr. Millen's
19 "Offshore Drilling for Oil in the Beaufort Sea, A
20 Preliminary Environmental Assessment," from page 37,
21 where he says,

22 "Regarding whaling in the Mackenzie Delta
23 region, fishes and whales are the main marine
24 resources used by the Inuit and Indians of
25 Inuvik, Aklavik, and Tuktoyaktuk. The socializing
26 and recreation associated with the annual whale
27 hunt in Shallow Bay and Kugmallit Bay are as
28 important as the hunt and the harvest annually
29 valued at about \$5,000. About 150 beluga are
30 harvested per year, providing food in summer
where the Inuit is less mobile and is restricted to

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 waterways, and when fish is the only other
2 available fresh food. Whale products such as
3 muktuk, meat and oil provide a varied diet but
4 are not a staple food because they are only
5 available seasonally."

6 Now if I asked you to comment on that, sir, I take it
7 you would give me the same answer, that you have not
8 done an economic study.

9 A I think the statement
10 is fair. I won't comment on the monetary figure.

11 THE COMMISSIONER: That
12 \$5,000 is the value Dr. Millen assigns to 150 animals?

13 MR. GOUDGE: Yes.

14 THE COMMISSIONER: Which is
15 approximately the annual catch.

16 MR. GOUDGE: The harvest, as
17 he puts it, annually, valued at about \$5,000, and I
18 would have asked Dr. Sergeant had he been familiar
19 with it how that's compiled, but --

20 THE COMMISSIONER: That's
21 \$33 an animal.

22 MR. GOUDGE: Not much a
23 pound.

24 THE COMMISSIONER: That would
25 buy two people a steak dinner some evening.

26 A There is a detailed
27 socio-economic study which I've seen in its very
28 early stages, and I believe it's to be contributed
29 to the Beaufort Sea program, but I'm not quite sure.
30 Dr. Millen would know.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 MR. GOUDGE: Q Well, Dr.

2 Sergeant, coming then to your reserve concept itself,
3 you've told us you're not wedded to any specific
4 boundaries, is that so?

5 A That would be correct.

6 Q There is a principle
7 involved, though, I take it, and that principle is
8 perhaps recited in your evidence in chief where you
9 say that -- if I can find it --

10 "The area of the reserve should be the same
11 as or greater than the area of the main mass
12 of the whales found in the western area of
13 the delta in most years."

14 Is that the touchstone of delineating your reserve?

15 A Yes, I think so. If
16 we got down to details I think we'd see from the
17 two excellent maps shown in the Slaney Report that
18 there are or can be two groups in that area, but in
19 some years, as in 1975 at least, there was only one.

20 Q Now, you propose this
21 as a reserve without activity of any kind.

22 A Yes.

23 Q And year-around, as I
24 understand it.

25 A Well, this is, of course,
26 from the standpoint of the whales not necessary except
27 in summer, but I have a certain skepticism that a
28 proposal for certain months could in fact be enforced.

29 Q Well, that's my next
30 question. I can't understand why it's necessary year-

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 around if the only whaling activities going on there
2 takes place over a period of one month.

3 A I have difficulty in
4 imagining that the kind of activities associated with
5 the oil and gas industry could go on without free
6 traffic during the open water season. That is
7 where this activity is needed.

8 Q Given the enforcement
9 capacity, though, to ensure that activity ceases in
10 the sensitive time, you'd be satisfied with a reserve
11 that has a limit in time as well as space.

12 A Yes, I think so,
13 presumably so long as not toxic materials weren't being
14 discharged or left or so on.

15 Q Now, I wonder whether
16 you've considered any other alternatives as means of
17 protecting the calving areas, or protecting the
18 whale population? First of all, is there any con-
19 sideration to be given to shipping corridors or
20 barging corridors as a means of satisfying the same
21 end?

22 A I can't say I'd got as
23 far as that. I suppose shipping or barging corridors
24 would have to be ⁱⁿ channels, for the most part. I suppose
25 most of these concentrations in fact lie downstream of
26 the river channels because they benefit from the warm
27 water carried down through the channels, and therefore
28 they would lie right athwart of the channels in the
29 estuary, I suppose. I haven't looked at the detailed
30 bathymetry.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 Q Shipping is no doubt
2 a problem that causes you concern in the calving
3 areas, it's not just the building of artificial islands.

4 A I think it's the total
5 kind of traffic. The building of islands requires
6 shipping, or seems to have done so up till now.

7 Q And as you say, it's
8 the combined force of the variety of activities that
9 causes the problem.

10 A Yes, essentially water-
11 borne.

12 Q Now, if I can get you
13 away from the synergistic example for a moment, let
14 me ask you this: Given that your reserve concept
15 doesn't get off the ground, if I can put it that way,
16 what will the effect be on the population, assuming
17 a one-year construction across Shallow Bay, of a
18 pipeline?

19 A It appears to displace these
20 animals seaward, I'm not clear if construction, for
21 instance of a gas pipeline, whether this would involve
22 vessels coming in from seaward or not, as I don't
23 have the scenario, I can't easily suggest the effects.
24 But supposing that the activity were at a gas line or
25 upstream only, I suppose that the whales would be
26 displaced seaward by some number of miles. That would
27 be my estimate.

28 Q Let's take the worst
29 case, that they are driven entirely from West Mackenzie
30 Bay and can't calve there for the single year that it

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 takes to put the pipeline in. What will the loss of the
2 single year's calving do to the population?

3 A Well, it would be
4 apparently a loss of --

5 MR. MARSHALL: It's not clear
6 to me, Mr. Goudge, what it is you're asking the witness.
7 You asked him to give an opinion of a particular event.

8 MR. GOUDGE: I'm not asking
9 you, Mr. Marshall; I'm asking the witness. Perhaps if
10 he understands he'll --

11 MR. MARSHALL: Well, I'd like
12 to be able to follow this as well.

13 THE COMMISSIONER: You make
14 your point.

15 MR. MARSHALL: I don't
16 understand what he's asking. It seems to me the
17 witness started to answer a question and then Mr.
18 Goudge changed the question quite materially. I'm not
19 sure what the witness is being asked about. That's
20 all I'd like -- all I'd like is some clarification
21 from Mr. Goudge as to what it is he's asking the
22 witness that I might understand and be able to follow.

23 THE COMMISSIONER: All right,
24 do you want to put that question again and we'll take
25 -- pay attention, closer attention to it?

26 MR. GOUDGE: Well, sir, let
27 me ask you, Dr. Grainger -- or Dr. Sergeant, if you
28 assume that the pipeline is built across Shallow Bay,
29 and is built in one summer, and has the worst possible
30 effect on the population, that is, it keeps the population

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

1 out of the West Mackenzie Bay, entirely for that year.

2 THE COMMISSIONER: That
3 is it keeps them not only out of Shallow Bay, but out
4 of West Mackenzie Bay.

5 MR. GOUDGE: Yes.

6 THE COMMISSIONER: Downstream --

7 MR. GOUDGE: Yes.

8 THE COMMISSIONER: --effects
9 that it is assumed will be that --

10 MR. GOUDGE: Yes, I'm taking
11 that as the worst possible effect that could result
12 from the putting in of the pipeline, and I take it
13 that that would result in a substantial loss of one
14 year's crop.

15 A If the whales were
16 displaced out to cold water and could not calve, or
17 the calves could not survive, there would be a loss
18 of one year's crop to the tune of about 60% of that
19 year's calf crop. If the whales were able to move
20 to another area of calving, and whether these are in
21 fact separate tribes of whales, I don't know, it
22 would seem possibly more probable that they would look
23 for another area, and possibly find it in either the
24 central or the eastern delta, to some degree at least.

25 Q Yes. Well, continuing
26 my worse case assumption, if other areas are not to
27 be found, then you'll lose the one-year's calving.

28 A Which would be about .6
29 of the total year's calving, judging by the size of
30 the other concentrations for one year, yes.

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
Cross-Exam by Goudge

Q What long --

THE COMMISSIONER: Excuse me.

Can we have that played back? I'm sorry.

A We have estimated that about 60% of the whales on an average use that area for calving.

Q Right.

A So that the loss would be 60% of that year's calf production, if they could find other areas, on the assumption the calves require the warm water and that they have been displaced into cold water which was not suitable for calving.

Q All right, that's the complete proposition. The point 6, I think, threw me off.

A 60%, .6.

MR. GOUDGE: Q And I take it, Dr. Sergeant, that that would have no long-term effect on the overall population.

A That is correct. There would be a slight dip and it would not be particularly noticeable.

THE COMMISSIONER: It is -- what you were chiefly concerned about in your paper this morning was the long-term impact of oil and gas drilling and production activity throughout the delta.

A Simultaneously.

Q That would constitute a permanent expulsion to a great extent of the whales

Percy, Grainger, Barry, Stirling
Smith, Stein, Sergeant
C ross-Exam by Goudge

1 from the calving grounds , and that's what you were
2 chiefly concerned about.

3 A Yes, I'm really, I
4 think, projecting the present level of activity which
5 is increasing exponentially to the immediate few years
6 ahead when presumably the level of activity of all
7 kinds increases, that without -- up to now it has
8 been largely in the -- all kinds of increases without
9 -- up to now it has been largely in the central part
10 of the delta and while that was the case, it didn't
11 seem too serious but the islands appear to have been
12 expanding in the south-west direction.

13 (QUALIFICATIONS & EVIDENCE OF I.G. STIRLING
14 MARKED EXHIBIT 455)

15 (1975 WHITE WHALE STUDY BY SLANEY & CO. LTD.
16 MARKED EXHIBIT 456)

17
18
19
20
21
22
23
24
25
26
27
28
29
30

Percy, Grainger, Barry,
Stirling, Smith, Stein
Sergeant

Cross-Exam by Goudge

A

There appear to be predictions possibly of fault areas which look good for drilling which will produce them further in that direction and the possibility of a gas pipeline south of that added to this, squeezing them into an area in between and that kind of projection appears to be serious.

MR. GOUDGE:

Q Well, Dr. Sergeant, insofar as we concentrate on a piece of the picture, and that is the piece of the picture as you see it, the one summer construction crossing of Shallow Bay, if you didn't have your reserve, I take it you would want to put some time limit on the construction of the crossing of Shallow Bay. For example, you would want it not to occur during the month that the whales are most southeasterly in Shallow Bay?

A That's correct. That would be the month of July, pretty close.

Q Let me ask you then to comment on Dr. Gunn's proposal which is found at page four of the paper contained in a study of the distribution and movements of snow geese, other geese and whistling swans on the Mackenzie Delta, Yukon North Slope and Alaskan North Slope in August and September of 1975. Dr. Gunn has this to say at page four of his study attached to the end of that volume.

"If a choice has to be made as to which portion of the summer period might better be selected for construction work across Shallow Bay, we think that most biologists would agree that there would be less risk involved in

Percy, Grainger, Barry
Stirling, Smith, Stein,
Sergeant

Cross-Exam by Goudge

1 using the early part of the summer, i.e. up to about
2 August 25 on the grounds that one -- probably less than
3 1,000 belugas frequent this locality. Two, few belugas
4 penetrate the bay as far up as the proposed crossing
5 point. Three, any that did penetrate beyond the crossing
6 point would not be entrapped. Four, the noises of
7 construction would probably prevent them from coming
8 dangerously close, and, five; an electronic underwater
9 noise barrier might be devised to keep them out of the
10 immediate vicinity of construction."

11
12 Now, I take it from what you
13 said earlier that you would not agree ^{with} at least Dr. Gunn's
14 timing proposal.

15 A Yes, I think Dr. Gunn's
16 probably predilection for that time period would be,
17 at least initially determined by his interest in the
18 bird's staging areas.

19 Q Bird versus whales.

20 A -- And whether he had
21 considered the -- or whether he had it available -- the
22 latest report of Slaney at that time, I don't know.
23 I presume from the date -- what was the date of the
24 hearings he had not?

25 Q I don't know, sir. I
26 could -- It's November, 1975.

27 A I received a copy from
28 Mr. Evan Birchard of Imperial early -- 21st of January
29 and this was issued, I'm not sure what the date was.
30 I would imagine the original date on the letter from the

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant

Cross-Exam by Goudge

1
2 company to -- I take it Imperial -- yes, it was December
3 11th when the report was distributed.

4 Q One idle curiosity I have
5 is what your comment would be on Dr. Gunn's proposal
6 that an electronic underwater noise barrier might be
7 devised to keep the belugas out of the immediate vicinity
8 of construction.

9 A I should think we've got
10 enough noise already.

11 Q Now Dr. Stein, let me
12 move --

13 THE COMMISSIONER: This is,
14 I take it, well past the halfway mark of this cross-
15 examination so we could stop for coffee.

16 MR. GOUDGE: Yes sir, I have a
17 little more but it'll go more smoothly after coffee.

18 (PROCEEDINGS ADJOURNED AT 9:35 P.M.)

19
20 (PROCEEDINGS RESUMED AT 9:45 P.M.)

21 MR GOUDGE: Mr. Stein, let
22 me move to you if I may and deal with some questions
23 relating to fish. When Mr. Webb was here, we went
24 through with him the problem presented by game fishing
25 in the clear deep lakes of the delta. I take, as far
26 as you're concerned that, as well is a problem controlling
27 game fishing in the clear deep lakes?

28 WITNESS STEIN: Yes, it very
29 well could be.

30 Q Yes. He used, as an example

Percy, Grainger, Barry,
Stirling, Smith, Stein
Sergeant
Cross-Exam by Goudge

1 Yaya Lake which was one that he feared might be overfished
2 if it weren't properly regulated. Do you agree?

3 A I think the potential's
4 probably there. I understand that there is a fair sport
5 fishery on the lake.
6

7 Q Now, I asked Mr. Webb what
8 steps he saw being taken or that could be taken to
9 control that and at page 17773 of the transcript, he
10 said that "we", and I take it that he meant Slaney and
11 the producer companies have suggested and
12 discussed with the developers the possibility of en-
13 couraging government or discussing with the government
14 such regulations as fishing with barbless hooks, perhaps
15 reducing the limit of fish that can be, or even eliminating
16 totally the taking of large lake trout from Yaya and
17 perhaps other lakes. Have you considered any of these
18 or other solutions to the problem?

19 A I can't say that I gave
20 any consideration in any great detail at least to the
21 potential of overfishing in these particular lakes.
22 However, there has been work done by the service on
23 Great Bear Lake. An experimental study using barbless
24 as compared to barbed hooks. I can't recall offhand
25 the full details of the study but the general conclusion
26 out of it was that barbless hooks did not decrease
27 mortality significantly.

28 Q Just pausing there, I take
29 it you're telling us that that is not an effective
30 regulating device?

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant

Cross-Exam by Goudge

1

2

A It apparently is not, no.

3

Q Sorry, I cut you off.

4

A There, of course, would

5

have to be a fair amount of work yet to be done towards

6

setting up any sort of a management scheme on that

7

particular lake. Our fish management people have not

8

looked at say Yaya as an example now, in any great

9

detail, to my knowledge. You would obviously need

10

some population dynamics and fish population size figures

11

in order to base a management program. They have been

12

using catch controls on Great Bear. I think -- As

13

I recall, I think they're allowed one trophy size fish.

14

I'm not quite sure what size they're putting on "trophy",

15

plus "X" pounds beyond that. This is roughly the scheme

16

that they are using to manage the Great Bear Lake fishery

17

right now. I suspect that it would probably be fairly

18

effective in the case of a lake like Yaya, with sufficient

19

background information.

20

Q Carrying onto page four

21

of your prepared evidence, you say there that the

22

Mackenzie Delta has been designated by the fisheries

23

and marine service as an area likely to be sensitive

24

to pipeline construction and I take it, as well therefore,

25

to be sensitive to producer activity?

26

A Yes, that's correct.

27

Q Yes. We've been through

28

this a number of time before; baseline data obviously is

29

crucial in determining or in predicting impact. You'd

30

agree with that?

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

A Yes.

Q In particular, in terms
of the producer activity, the activity of Shell and
Imperial is perhaps paramount in terms of its potential
for fish impact because of the areas of the delta their
activity is located in. Would you agree with that?

A I think it would have the
potential of a greater impact, yes, if what I envision
as the overall development that is likely to come is
anywhere near being accurate.

Q As between Imperial, Gulf
and Shell; Imperial and Shell because of their position
in the lower areas of the delta and their closeness to
the Mackenzie Channel present the greatest risk to fish?

A Well, I'm looking at it
more from the point of view of the total number of
stream crossings required, now, be it for a trunkline or
a feederline, the effects are going to be relatively the
same.

Q Yes. Are you satisfied
when you say baseline data of certain type exists, that
there is sufficient baseline data for prediction of
impact of the producers' proposals?

A No. There is not, at
the present time. However, work is continuing. We have
a study that is in progress right now. We'll be terminating
this March, which will give us some fairly site-
specific information
on the feederline system as it is proposed right now,
at least, and I'm not fully aware of what is being done

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant

Cross-Exam by Goudge

1 or proposed by the producers themselves. But, at the
2 present time, no, the basis, data base is far from being
3 sufficient but --
4

5 Q And would that comment
6 apply to the cross-delta proposal of the trunkline as
7 well?

8 A Yes, in my opinion, it
9 would.

10 Q Now, let me read to you
11 a statement from the "Arctic Gas Environmental Assessment
12 of the Cross-Delta Route" and ask for your comment on
13 it. They say at page seven of their "Environmental Assess-
14 ment of the Cross-Delta Route", near the bottom of the
15 page that:

16 "The cross-delta route and original prime pipeline
17 routes between Shingle Point and Thunder River
18 show little overall difference in terms of potential
19 impact, and that's impact on fish".

20 Would you concur with that
21 general proposition?

22 A No, I don't think I could.

23 Q How would you differ?

24 A Well, we would have to
25 base it on the whole reason for classifying the delta
26 as being significant in its entirety. We know that there
27 are tremendous fish stocks in the area. We know that --
28 in fact we are getting even more of an insight now of
29 just the type of habitats that are being used, say for
30 overwintering, where what had been viewed as relatively

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1 minor channels and lakes and presumably, if not any
2 great significance, we're finding out just the opposite
3 now, I think. So, it's the resource base and it's
4 utilization as well. Now, there are, as we've covered
5 many times, mass migrations of fish coming up through
6 delta channels. Fish which enter into domestic fisheries
7 as far up as Norman Wells. I've attempted here to get
8 at what could be potential problems associated with
9 dredging. There's going to be problems even with winter
10 crossings which I'd gone into in previous testimony,
11 with increases in siltation on wintering areas and
12 spawning areas, etc. It just seems to be logical to me
13 that if you're running any kind of a pipeline right
14 through the middle of this area, with numerous channel
15 crossings that it obviously has to have a greater risk
16 than one which avoids the area.

17 Q Can you put an order of
18 magnitude on that greater risk?

19 A I'd have a difficult time
20 really, doing that.

21 Q Are we talking ten times
22 as risky?

23 A I don't think -- well --

24 Q Stick your neck out.

25 A Well, I would say somewhere
26 between three and tenfold, I think. You asked for a
27 guess, now.

28 Q Yes, sir. Coming to the
29 point about dredging, you make a substantial point in
30 your prepared evidence about dredging being a major

Percy, Grainger, Barry,
Stirling, Smith, Stein
Sergeant
Cross-Exam by Goudge

1 concern. I take it, among other reasons, because you're
2 concerned about its effect on migrating fish -- the
3 siltation caused by dredging affecting migrating fish.
4 Do I understand you correctly?

5
6 A That's part of it too, but
7 we could possibly have similar reaction to what we've
8 been discussing with whales, that if you take a channel
9 such as the Middle Channel which might be -- I can't
10 recall offhand if this is actually the specific proposal
11 but, say it's partly blocked off by a berm, you've
12 therefore restricted the area available to the fish to
13 move through and what is then going to be the reaction
14 to the noise and the commotion of the operation itself.
15 Silt, I would have to say is probably the main problem
16 yes, but there are other things which could potentially
17 cause problems.

18 Q In your view would silt
19 possibly deflect the migration of fish?

20 A It's hard to say. The
21 common story seems to be that at this time of the
22 year, the Mackenzie River is silty anyway. They live
23 in the silt. They move ^{through} the silt so there therefore
24 should be no problem. Well, any sort of an organism--
25 they're living in an area -- they've adapted to the
26 what you might call the normal conditions or let's get
27 more specific and say the normal silt levels. How they
28 are going to react then to a multifold increase in
29 suspended sediment levels, I don't think anybody really
30 know the answer to.

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

Q You have concerns about

suspended sediment though other than those of Dr. McCart who emphasized, as I understand them, and I may do him an injustice, the danger for spawning areas and for feeding beds, above all else insofar as suspended sediment is concerned.

A No, I'd have to put overwintering areas in there as well.

Q Yes.

A This would be especially true in the delta, as I say, where at least during that winter period, the water is quite clear. You do not have the suspended sediment levels.

Q Now, you make some reference in your prepared evidence to drilling fluids and one concern that I've had is whether in your view, the drilling fluids that you describe on page six of your prepared evidence have been found at any time to contain persistent constituents that might taint or worse contaminate fish.

A I can't recall any that specifically that as far as taste; is that what you're driving at, the factor of taste?

Q You can't recall cases either of tainting or of contamination?

A Well, toxic effects is one thing. I thought you were getting at tainting as pertaining to --

Q Well let me start there.

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant

Cross-Exam by Goudge

1 You say you have no recollection of any incidents where
2 tainting has occurred?

3 A Not specifically related
4 to drilling ones, no.

5 Q What about contamination?

6 A Well, with reference to
7 another report that was done by Mr. Falk, I don't think
8 I mentioned this one. It's entitled "Acute Toxicity of
9 Petrochemical Drilling Fluids, Components and Wastes on
10 Fish". They attempted to look at several drilling muds
11 that are being used. What they also did was to look at
12 the components commonly used and they've mentioned in
13 here, and I'll quote this that:

14 "out of 27 common components of drilling fluids
15 tested, seven were toxic, six were moderately toxic,
16 five were slightly toxic and six were practically
17 nontoxic."

18 Now, when I add those up, that
19 only amounts to 24 and I don't know what they thought
20 of the other three. There are, obviously, specific
21 compounds in these muds that are toxic to fish. The
22 problems which I've related to, of course, are that the
23 drilling muds are not constant, the makeup of them varies
24 with the individual wells and actually within a given
25 drilling operation itself. One of the recommendations
26 that has come out of this report is that the industry
27 should perhaps be looking for alternative nontoxic
28 compounds to replace the toxic ones which, to me, makes
29 a lot of sense anyway.
30

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1 Q Yes. Apart from toxicity
2 and I'll stop this line at the end of this question,
3 is there any example you know of where there's been
4 contamination as a food source of the fish through
5 drilling fluids? You said "no tainting". I assume if
6 there's been no tainting, there's been no contamination
7 as far as you know.

8 A I'm not familiar with any
9 results to that effect. No. Most of the work that I've
10 reviewed has been done as it relates to toxicity and not
11 through tainting.

12 Q Now, you spent some time
13 in your prepared evidence on the effects of oil on fish
14 and in general terms, I take it you've no doubt that the
15 direct effects at least of oil on fish are not nearly of
16 the same order of magnitude as they would be, say, for
17 birds.

18 A That's generally true, yes.

19 Q Oil on the surface is
20 relatively little danger to fish?

21 A Relatively speaking, I
22 would say so. Their first reaction, I would assume
23 would be to avoid the area.

24 Q Yes. Fish mobility
25 obviously permits a great alleviation of any threat oil
26 poses.

27 A Under ideal situations, I
28 think, yes.

29 Q Now, there is, however,
30

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1 some concern as you've expressed to ensure that certain
2 areas, particularly along the coast, might be kept
3 immune from any oil spill because of the importance of
4 the fish populations there. Did I understand you
5 correctly in that regard?
6

7 A Yes.

8 Q As far as you know or as
9 far as you're concerned, is there sufficient body of
10 knowledge available to allow us to identify those key
11 areas along the coast that might be -- that one might
12 try to keep the oil away from in the event of a spill?

13 A The Beaufort Sea work that
14 was done by our group, I think, has gone quite a ways
15 towards identifying some of these areas, in general terms
16 at least. I can't say that the work is perhaps as
17 complete as we would like to see it, but generally, it
18 appears to be the area roughly between Kittigazuit and
19 Tuktoyaktuk which appear to have, as I recall it correctly,
20 substantial numbers of bays and lagoons with sufficient
21 depth to support considerable numbers of fish. The other
22 area was -- a key area was the northeast portion of
23 Richards Island. The work hasn't been expanded quite as
24 far as we would like to see either. Going east at least,
25 Tuktoyaktuk was a cutoff point for logistics reasons
26 so there's I think a need for some additional work
27 farther east.

28 Q But there's some considerable
29 start made along this route of using lagoons that don't
30 have substantial fish populations to contain an

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1 oil spill?

2 A I'm sorry, could you repeat
3 that again?

4 Q I didn't put it very well,
5 it's getting late. Let me quote you from Dr. Lewis's study
6 done for the Beaufort program where he says at page 37,
7 "In the event of an oil spill approaching the coast-
8 line it may be possible to use lagoons behind
9 spits or bars or along the Tuktoyaktuk Peninsula,
10 breached thermokarst lakes to contain it. The
11 result in potential for destruction of fish and
12 wildlife is critical to this suggestion but if other
13 methods of containment are less reliable or cause
14 even greater destruction, use of natural features
15 may become viable".

16 As I understand him , he is saying that in the event of
17 an oil spill, you can put the oil in certain lagoons with
18 a minimum of damage. To do that, you've got to know which
19 lagoons to choose.

20 A Well, generally I would say
21 that that would be true, but if we are faced with a spill
22 of any substantial size -- in other words such that it
23 would be threatening a fairly substantial portion of the
24 coast-- and if indeed it is actually technically possible
25 to direct the spill into a given lagoon, I think I would
26 be willing to do it, if, I say it would be possible to
27 save a portion of the coast. Now if we happen to run into
28 ten thousand of Tom Barry's birds, well, you may have
29 another problem.

30 Q Yes, I was going to ask Dr.

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1 Barry if he considers that a viable technique.

2 WITNESS BARRY: I suppose it
3 would be possible to make a tradeoff of some sort, but
4 I don't know exactly how and the thing would be so
5 variable -- which lagoon -- and things of that sort.
6 It sounds a little bit --

7 Q Impractical?

8 A Yes.

9 Q Now finally, Mr. Stein, you
10 say on page ten of your prepared evidence that in your
11 view

12 "An inventory of baseline data for environmental
13 compenents in the Beaufort Sea has been compiled".
14 You speak there, I didn't understand you earlier when you
15 responded to a question. Do you speak there for fish or
16 for all data?

17 WITNESS STEIN: Primarily, I'm
18 talking about fish, yes.

19 Q I take it you'd acknowledge
20 though nonetheless that the population estimates, for
21 example of fish, by comparison with those available for
22 birds is of a much lower order of magnitude?

23 A Considerably lower, yes.

24 Q So that there are very
25 substantial information to fish in seas insofar as fish
26 are concerned, which may not exist as far as, for example,
27 birds are concerned?

28 A That's true.

29 Q Nonetheless, you're prepared
30 to say that to some degree at least sufficient baseline

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1 data exists?

2 A Well, we certainly know more
3 than we did a year ago. It's enough to make a start on
4 it, I mean. If you would like me to go into another ten
5 minutes on what --

6 Q No, I think I can't trouble
7 you to do that. You've been through that most satisfact
8 orily earlier. Now, Dr. Smith, let me ask you one or two
9 questions, if I might, please. Particularly in relation
10 to the use of seals as a resource base -- and I have
11 again a quote from Dr. Millen and I'd like to put it to
12 you and get your reaction to it. You may have written it,
13 so I wouldn't be surprised if you were affirmative, but
14 let me put it to you and get your reaction. Dr. Millen
15 says in the report of his that I quoted earlier that:

16 "Seals are little utilized in the settlements of
17 Aklavik, Inuvik and Tuktoyaktuk which are mainly
18 fishing and whaling communities. The sealing centers
19 of the Beaufort Sea are Sachs Harbour, Paulatuk and
20 Holman. Traditional uses such as meat for dogs,
21 oil for heat and light, and skins for clothing have
22 diminished or disappeared. With the appearance of
23 snowmobiles, fuel oil and manufactured clothing,
24 the incentive for sealing has shifted from domestic
25 use to the export of skins. Seals are an important
26 source of income in a subsistence economy, especially
27 east of the Baillie Islands where employment
28 opportunities are least and marine resources utiliza-
29 tion maximum. Each seal landed provides 23 kilograms
30 of meat and organs values between 33¢ and 48¢ per

Percy, Granger, Parry,
Stirling, Smith, Stein
Sergeant
Cross-Exam by Goudge

1 kilogram or a minimum of \$7.50 per seal. The estimated
2 ringed seal harvest from four villages was \$8,500 with
3 nearly 94 percent of the catch taken from Holman."
4

5 Do you have any comment on that
6 passage or is it accurate as far as your experience goes?

7 WITNESS SMITH: I think that's
8 a pretty fair statement. I don't have any disagreement
9 with it at all. The values assigned to meat derived from
10 seals, I don't know how they were estimated. I wouldn't
11 know how to go about estimating them. Seal pelts have
12 varied in prices over the years, but, fur prices have
13 generally been getting better and therefore, seal pelts
14 are an important source of the overall income
15 of Holman and Sachs Harbour. Paulatuk doesn't take all
16 that many seals in a year and the other three communities;
17 Tuk, Inuvik and Aklavik are really taking insignificant
18 numbers of seals.

19 Q Dr. Millen goes on to say
20 that:

21 "In years of poor fox trapping, seal furs contribute
22 as much as fifty percent or \$36,000 of the total income
23 for Banks Island residents."

24 Would you have any comment on
25 that statement?

26 A Well, I'm not really all
27 that familiar with the Sachs Harbour revenue but I
28 believe that Ian Stirling could comment on that.

29 Q Dr. Stirling?

30 WITNESS STIRLING: In recent
years, seals have been taken in Sachs Harbour really as

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1 much for recreational purposes as anything, to provide
2 some hunting to do in the summertime, and that for some
3 years now, I don't believe the seal catch there has
4 exceeded a maximum of 600 and has often been considerably
5 lower and that that figure would be greatly inflated.

6 Q I'm sorry, I didn't catch
7 the last part of what you said.

8 A That figure that you gave
9 me, what was it?

10 Q \$36,000.

11 A -- Would be greatly inflated
12 by at least a factor of ten.

13 WITNESS SMITH: I believe those
14 figures were derived from a report written by Peter Usher
15 quite a long time ago on the catch of seals in the --
16 when would it be?

17 WITNESS STIRLING: It would be
18 based on catches in the early sixties when they were still
19 using dog-teams fairly extensively and feeding those dogs
20 with seals, which they don't do anymore.

21 THE COMMISSIONER: What report
22 are you reading from?

23 MR. GOUDGE: I'm reading from
24 the report of Dr. Millen that I referred to earlier, sir.
25 It's dated December 19, 1975 entitled "Offshore Drilling
26 for Oil in the Beaufort Sea; a Preliminary Environmental
27 Assessment".

28 THE COMMISSIONER: Right, right,
29 right. Well, the Millen report, I know. So that Holman
30 would be the principle village where the seal harvest is

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1 an important part of the economy?

2 WITNESS SMITH: Very definitely.

3 It's the most important part of the economy in Holman.

4 Q Whereas Paulatuk rely
5 on caribou and Arctic char as well as seals.

6 A That's right. As a matter
7 of fact, the Paulatuk people are not traditional sea
8 mammal hunters and according to Bill Joss who's a Hudson
9 Bay manager and who opened a store in Letty Harbor,
10 near where Paulatuk --

11 Q Sorry, according to who?

12 A Bill Joss who's an old
13 Hudson Bay manager. When he first went down there, per-
14 haps thirty years ago, the people of that area had never
15 actually even started hunting seals. They didn't even
16 have boats to hunt seals with.

17 MR. GOUDGE: Well, Dr. Smith, as
18 far as you're concerned the statement made about the
19 concentration of the catch of ringed seals being 94 percent
20 from Holman, that's accurate?

21 A I didn't do that particular
22 calculation.

23 Could you just repeat
24 that figure?

25 MR. GOUDGE: The sentence from
26 Dr. Millen reads this way:

27 "The estimated ringed seal harvest from the four
28 villages, that's"-- I count three, but it includes
29 Sachs, Paulatuk and Holman --"from the villages was
30 8,500 with nearly 94 percent of the catch taken from

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 Holman."

2 A Yes., I would agree
3 generally with that figure. It's the majority of the
4 catch is taken there.

5 Q And that's where your
6 studies have concentrated as I understood your evidence?

7 A That's right.

8 Q The numbers you say --

9 THE COMMISSIONER: Excuse me.
10 Mr. Goudge. I thought Dr. Millen's report was in a sense
11 a composite of the work done by many of you and then his
12 own conclusions, so to speak, superimposed on the work
13 done by others. Is that fair?

14 A I think it probably is,
15 except that I didn't have a direct input into his report.
16 I believe he went back to the literature to get those
17 kind of figures.

18 THE COMMISSIONER: I see.

19 MR. GOUDGE: Just so I'll under-
20 stand, Dr. Smith, you said, I think, this morning that
21 your studies at Holman provide your basis for your theory
22 of seal migration in this sense; that the catch at Holman
23 is of such numbers that it couldn't possibly be supported
24 by the breeding that takes place in the immediate Holman
25 vicinity.

26 A Yes, that's what I said.
27 What I said, was that the Amundsen Gulf, which is quite
28 a large area but which is the area that perhaps could be
29 assumed to be supplying the Holman catch, is not sufficient
30 in its production of seals to supply the peak catches that

Polcy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 have been taken at Holman.

2 Q You conclude from that
3 that there must be immigration of seals, to be killed
4 by the Holman hunters?

5 A Yes. We have, in fact,
6 direct evidence that there is such an immigration from a
7 few tag returns. Animals tagged at Herschel Island have
8 been taken in Holman. Also other indirect type of evidence
9 such as the movement in to the Holman area at certain
10 times of years of certain age classes of animals that
11 apparently have come from areas far removed.

12 Q Yes. The tagging and the
13 observed movement of seals, I take it, are the two kinds
14 of evidence on which you base your migration proposition?

15 A Yes, that's correct.

16 Q Your tagging program, and
17 I spoke to you about this earlier, resulted in three tags
18 being returned out of --

19 A Out of approximately 210.

20 Q Yes, and how does that rate
21 of return compare with other capture, recapture programs
22 that have been engaged in by say fish people?

23 A Well, it's hard to make a
24 direct comparison, but if you get a one percent recovery
25 per annum in a sort of a fishing situation where you do
26 have a fishing effort, people actually fishing for the
27 animals that you've released, it's considered a reasonable
28 return. In our particular case, it's much lower than that
29 since the recoveries have come over a five year period.
30 Nonetheless, we've had, I think, significant returns,

Deley, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 although they might not seem that because of the low
2 numbers involved. But considering the vast areas covered
3 by these animals, we did have one that showed up in
4 Point Barrel that was tagged on Cape Parry, it's eight
5 hundred miles along the coastline and considering even
6 more importantly the few hunting areas in that whole
7 vast area of the southeastern Beaufort Sea and Amundsen
8 Gulf and again the few, or the low number of hunters
9 involved. We've had better success perhaps than what we
10 expected initially. In any case, we've proved what we
11 set out to prove, that the animals do move. We found
12 out that the animals move.

13 Q Sorry, one of your concerns
14 I take it about the exponentially increasing development
15 is the impact it may have on this movement?
16

17 A Yes. I feel that the
18 mobility of seal populations in this rather low -- area
19 of low production generally is an important feature that
20 the populations have to retain for their wellbeing.

21 Q Given your present knowledge
22 of the extent over which those migrations take place
23 though, if development were to stop at the end of a gas
24 trunkline and the artificial islands presently in existence
25 would there be any noticeable effect on seal migration
26 patterns?

27 A We don't yet know enough
28 about the actual routes, if they can be called that of
29 the migrations, if they can be called that. There is a
30 dispersion. "Migration," perhaps is too strong a term to

Percy, Grainger, Parry,
Stirling, Smith, Stein
Sergeant,
Cross-Exam by Goudge

1 use. But as Dr. Stirling indicated, a very likely route
2 for the spring movement of seals back into the coastal
3 areas is that shear zone, a zone of leads which are
4 occupied by a significant segment of the population during
5 the winter. These might well act as highways into the
6 further eastern areas in the case of the movement towards
7 the Amundsen Gulf. Very likely there is some -- it could
8 well be that there is some sort of bottom contour or ice
9 feature that the animals are following. But we don't
10 know about the specifics of these routes yet.
11

12 Q So until you do, you're
13 anxious to be cautious and, I take avoid certainly among
14 other things, the shear zones insofar as development is
15 concerned?

16 A That's a critical area. Not
17 only for movements but because we do know that it's an
18 overwintering area for the non-breeding-- a significant of
19 the non-breeding segment of the population.

20 Q Now, Dr. Stirling, you told
21 us a little about polar bears. Let me ask you about your
22 view of their value to the local economy, again, using
23 Dr. Millen's report that I've referred to before. He
24 puts the value for 1973 of the polar bear harvest, if
25 I can use that expression at \$28,000 for the bears
26 themselves and \$12,500 for the value of the hunt to the
27 economy.

28 WITNESS STIRLING: What was
29 that first figure please?

30 Q \$28,000.

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1
2 A I would think that's
3 probably under by at least half.

4 Q What about the other figure?

5 A The value of the hunt
6 itself is a term that I'm afraid I don't understand.

7 Q Well let me read the
8 sentence to you. Dr. Millen says:

9 "The total sports hunting revenue from the entire
10 southeastern Beaufort Sea, insofar as polar bears
11 is a concern, was \$12,500 in 1973."

12 I take it he means by that revenue taken in in the course
13 of sport hunting for polar bears.

14 A I presume that's a figure
15 that he got from the Northwest Territorial Game Branch
16 and I wouldn't have any further comment to make on that.

17 Q I won't ask you the further
18 question but there seems to be one there. In dealing
19 with the kills that you spoke about, I was curious to
20 know whether in your view, given the population size
21 that you've told us about, whether the 55 or 60 figure
22 that you've given us is a sustainable figure?

23 A Well, that's an interesting
24 question. To summarize very briefly, we worked
25 in this population for five years, and you've probably
26 heard many times from many people that the years '71 to
27 '73 were in quotation marks, "good years"; that the
28 populations of seals and of bears have declined very
29 markedly in years '74 and '75. I spent the latter part
30 of last week working on the computer at U.B.C. simulating

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1 populations and using the birth rates and mortality rates
2 and so on, the essence of what -- the conclusions that we
3 came to at the end of the week, I would say tentatively
4 and we still have some more odds and ends to do, but the
5 population could have sustained the annual harvest of 72
6 at that period of time. There was no particular problem.
7 The population as it is at the moment, I don't believe
8 can sustain that harvest of 72 and the harvest is in
9 fact, or the quotas have in fact been increased to 77.
10 This means that unless there is immigration from other
11 parts of the -- for example, say Alaska or from north
12 of Banks Island toward Prince Patrick -- unless there
13 is immigration from those regions, or the food base or
14 seal base of the Beaufort Sea area comes back dramatically
15 and population catches on and takes off and increases
16 again, I would^{say} that population is going to continue to
17 decline.
18

19 Q Given the figures you've
20 told us about, approximately 1,000 --

21 A Yes. Actually the number
22 that we simulated off of was higher than that, but that's
23 a mathematical exercise.

24 Q O.K. Given that number,
25 what's the sustainable maximum?

26 A Well an approximation or
27 sustainable yield for the bear population, be it grizzlies
28 or polar bears is roughly five percent, so you're looking
29 at what -- fifty bears. If the population was 1,000,
30 you're looking at fifty bears. If it's 1200 you're looking

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant
Cross-Exam by Goudge

1 at sixty on a sustainable yield basis. It also makes a
2 lot of difference how you harvest an animal but that's
3 getting possibly a little deep.

4 Q One other question I have
5 is that on page nineteen of your evidence, you make
6 reference to seals having been found in certain places
7 with mercury in them and I wonder -- I wasn't clear,
8 and perhaps you didn't say -- where those seals were
9 found.

10 A Well, there's rather a
11 I'll
12 good piece of work's been done on that and/simply refer
13 you to one of the authors of that, which is otherwise
14 known as passing the buck.

15 Q Sorry, Dr. Smith.

16 WITNESS SMITH: Could you just --

17 THE COMMISSIONER: Mercury in
18 seals.

19 A We did a study of mercury
20 in seals in the Holman area; ringed seals and bearded
21 seals and found surprisingly high quantities in the livers
22 of the animal. Quantities that would be higher than
23 would be permitted to be sold, for example, in commercial
24 foods. Much higher. There is a lot of this -- this
25 might have been surprising a few years ago, given that
26 the idea then was that mercury came from sources of
27 industrial contamination, but there's been accumulating
28 evidence in the recent past that there are natural levels
29 of mercury that are magnified, through the food chain
30 and that animals at the top of the food chain such as
seals pick them up. The livers apparently were -- acts

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 as a filtering mechanism and it becomes a site which
2 concentrates the highest quantities of mercury. Apparently,
3 also there is just starting to be some evidence that it
4 is a site at which the mercury is detoxified and apparently
5 seals are able to withstand high quantities of mercury
6 apparently by detoxifying the mercury. We've also
7 done studies of other components at Holman, specifically,
8 of the Inuit diet. The seals were by far the highest
9 in mercury content and we looked at other things--
10 terrestrial mammals and so on. They had very low levels.
11 Sled dogs -- we did take a look at sled dogs that had
12 died during the winter and so on and they feed on an
13 almost exclusive ringed seal diet and it was sort of an
14 interesting thing to look at because it might give us an
15 idea of the -- what and the mercury levels might look
16 like in humans that feed only on ringed seals. We did
17 find that sled dog livers had quite high concentrations
18 of mercury. Much higher than the other terrestrial
19 mammals considered, such as caribou and foxes and wolves.

20 MR. GOUDGE:

21 Q Dr. Stirling, let me come
22 back to one point you make at page twelve of your evidence
23 where you talk about some maternity dens of polar bears
24 being found along the Alaskan coast. There is some --
25 let me ask you this. In terms of the prime route pro-
26 posed by Canadian Arctic Gas, is there a threat posed
27 of any substantial proportion, given your assertion that
28 there are maternity dens along the Alaskan coast.

29 WITNESS STIRLING: Well, I haven't
30 looked at the details of the information from Alaska,
so I'd be a little reticent to talk about that specifically.

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 What I've seen of the proposed route in Canada in the
2 Yukon area, I would not be the least bit concerned. There
3 is some denning does take place in some of the rivers in
4 Alaska but near the mouths of some of the rivers in Alaska,
5 it's quite clear that the amount of denning that has been
6 been located is no where near enough to account for the
7 bears that are around.

8 Q And insofar as Canada is
9 concerned, you have no concern because of the very few
10 numbers of dens found on the coast?

11 A That's right. I think
12 that that -- I might add the comment that I think that
13 that is -- there's quite a good chance that that's a
14 manmade consequence that I suspect that at one time,
15 there probably was a fairly significant denning of polar
16 bears along the whole mainland coast and I suspect that
17 the introduction of firearms and the buying of polar bear
18 hides by the whalers that wintered over in these regions
19 some years ago in several years in succession, probably
20 resulted in the removal of the female bears that denned
21 along this coast. Female vertebrates, as a generality,
22 tend to return to the same site to breed, be they geese
23 or be they bears. So what happens if you eliminate the
24 animals that breed in a particular area, is that you just
25 remove the portion of the population that's learned to
26 utilize that part of the habitat and it may be a long
27 time before it ever returns.

28 My reason for saying that I think
29 that that is the case, is that there's a very interesting
30 reference written by a fellow named Leffingwell who lived

10718
Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 for some years at the mouth of the Canning River and
2 in the early 1900's he recorded -- he was a geologist --
3 but he recorded in some detail the biological observations
4 in that area. He comments that in the time -- it was
5 published in 1919 but I think his observations were
6 based around 1912 or 13 or so -- that the Eskimos of that
7 area -- in the mouth of the Canning River only -- used
8 to kill nine or ten female bears with their cubs in their
9 dens every year to sell the hides. Well, you don't have
10 to do that on a very large scale over the area for too
11 long before you have a fairly marked effect.

12 Q Dr. Barry, coming finally
13 to you, sir. You've spoken at length and answered both to
14 questions from council in giving your evidence in chief
15 about the Kendall Island Bird Sanctuary and I understand
16 that you were the major proponent of the sanctuary in
17 the beginning. Let me ask you sir, now, if in light of
18 the information you have at present whether you as
19 opposed to anyone else, would see any modification being
20 desirable in the limits of the bird sanctuary?

21 WITNESS BARRY: I think so. I
22 think I addressed that to the cross-examination a bit
23 earlier today, yes.

24 Q Specifically, I didn't --
25 perhaps you can -- I didn't catch it this afternoon but
26 what modifications did you propose?

27 A In general, the inclusion
28 of Pelly Island and Pelly Island Sandspit and more
29 specifically, the eastern boundary could be extended
30 eastward and to do that, I assume with the oil companies

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 and land use people and everyone else involved, the
2 thing has gotten much more complicated that it was in
3 1958 and 1960. The southern part of the sanctuary as
4 it stands now, is less critical than the more northern
5 parts and the area I would think would be very nice to
6 see included, the eastward to the mouth of the Swan Channel
7 and including the Harry Channel and Dennis Lagoon area.

8 Q Yes.

9 A There's some maps around
10 here; I'm quite cynical about the conditions of the maps
11 around here, but --

12 Q They've seen a lot of hard
13 use, I think.

14 A -- it is an area to the
15 eastward of the Taglu drilling site.

16 Q Now, you're obviously
17 familiar with the activities proposed by the three
18 producer companies for the delta. I won't read it to
19 you, but I read to Mr. Webb when he was here, a proposal
20 of Dr. Gunn's that he favored the movement of two at
21 least of the gas plants, the scrubbing plant off the
22 delta entirely, southeast of Inuvik to be connected by a
23 road to Inuvik. Would you be in favor of a similar
24 proposal?

25 A Yes. The proposed sites
26 as they exist right now, I'm familiar with both of them,
27 I don't think they're there as a result of the Taglu
28 drilling rig study, we have a pretty good idea of what's
29 going to be effected because we draw analogies between
30 the two. I would first, in the matter of choices, would

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 prefer to see it up on the higher country of Richards
2 Island and near Tununk or back inland off the low, flat
3 delta. I think there are a lot of reasons for that,
4 not only concerning the birds, but also the storm tides
5 that can cover that area and the degree of dispersal of
6 all the things they have around a drill rig.

7
8 Imperial had a rather serious
9 spill on a rig just a couple of hundred yards north of
10 their proposed Taglu scrubbing plant and it was compounded
11 by a storm surge and snow right at the end of the season.
12 It flooded out their sump and it did spread over quite
13 a large area. Fortunately it was mostly light oils and
14 diesels and things like that but you could see what
15 happened, how far it dispersed. I would think it would
16 be desirable to get it off the low land into the nearby
17 Richards Island, and preferably, I would have to agree
18 with Dr. Gunn, completely south of there. I can see his
19 preference because a highway probably will be built anyway
20 up on that area. The channels in and the plans of Imperial
21 to bring the equipment to the Taglu scrubbing plant, or
22 whatever it's called, would call for straightening of
23 some of the channels. They would have to dredge to get
24 in there -- they're prefabricating this thing I think on the
25 west coast and bringing it around. It's been a rather
26 horrendous job to get it into that particular area.

27 The channels into Taglu have --
28 this is one favor I did for Imperial. I gave them all
29 the depth soundings when they first started in there.
30 They wanted to go overland in the first place and I told
them they could do it by barge, but these large barges

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 that would be required would call for some dredging.
2 Channels are variable from sixteen to down to about four
3 or five feet in some areas. They have some considerable
4 construction problems which I think would be undesirable.
5 I think for their own benefit, I think they could get
6 in there a lot easier if they had their scrubbing plant
7 at Tununuk or Swimming Point, or in that general vicinity.

8 Q At least out of the lowland?

9 A Yes.

10 Q Now, one of the things
11 that you've had considerable experience with, I'm sure,
12 sir, is the control of aircraft in the bird sanctuary and
13 elsewhere. There's no doubt that air traffic is going
14 to have to be controlled over the delta and particularly
15 near the gas plants and compressor stations and over the
16 bird sanctuary and I take it, you agree with that?

17 A Yes.

18 Q The means that we've had
19 recited to us of controlling them, include height
20 restrictions, takeoff restrictions, time restrictions
21 and designated flight pathways. Does that encompass the
22 bulk of restrictive techniques that you're familiar with?

23 A Well, the M.O.T. has
24 complete jurisdiction over aircraft control and height
25 levels and things like that. I think this is up to them.
26 What we did with Imperial Oil's cooperation on that summer
27 time operation at Taglu was prescribe a route that went
28 up the center of Richards Island and hooked in from the
29 side. It was sort of a button hook shaped flight pattern.
30 They enforced it simply by telling the contractor this was

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 part of the job and if they varied, they could find another
2 fuel company so --

3
4 Q How was it enforced as a
5 practical matter? Obviously, there weren't inspectors
6 out there every day looking up. Is it a practical kind
7 of constraint?

8 A I think in this case,
9 it was because it was not necessarily their own aircraft.
10 It was a contracted. I forgot. I think it was. I'm
11 not sure what helicopter company, but it's irrelevant.
12 They put it right in the contract with them, as I under-
13 stand it. They've mounted the flight path and elevations
14 in the contract, helicopter company's briefing shed
15 and so on, and I think if they varied from it, the tool
16 push and the rig and the people coordinating at Tununuk
17 were advised to let them know about it, posthaste and
18 if they went off on frolicking detours, if you want a
19 legal term, they probably would have had another company
20 doing the job very quickly.

21 Q What about height restrictions.
22 Obviously they can be imposed but how are they enforceable?

23 A We've put height restrictions
24 on just about all of our sanctuary permits where an oil
25 company or seismic company is involved in aircraft. That
26 height is usually 1500 feet. In some areas, that's not
27 very practical because 1500 feet is seldom achieved in a
28 foggy situation around the delta. We hold the company
29 that gets the permit responsible and subject to a cancella-
30 tion of their migratory bird sanctuary permit. Now,

1 more recently, the land use permits are -- our permits
2 sort of dovetailed in with land use permits of Indian
3 Affairs and I think people from Indian Affairs can update
4 you on the mechanics of that.

5 Q What concerns me is a very
6 simple thing, how do you tell when the plane is below
7 the designated lowlevel?

8 A I think, with a fair degree
9 of experience of aircraft around here, you can get a
10 rough idea of how high they are. M.O.T. I think, has
11 the -- in one situation where I know, M.O.T. actually
12 put out notams and things like that.

13 Q Put out what, I'm sorry?

14 A Notice to airman, I'm
15 sorry. It's a pilot's term. The protection of the
16 whooping cranes in Wood Buffalo Park, M.O.T. have put
17 out height requirements that have been in effect for
18 many years over that particular area.

19 Q If you put these techniques
20 together, the height restrictions, the time Restrictions
21 and the designated flight pathways, are you satisfied
22 that they constitute together a sufficient set of
23 regulatory tools to do the job as far as birds are
24 concerned?

25 A Yes, with some qualifications.

26 Q What are the qualifications?

27 A Well, there are a lot of
28 other aircraft flying around the Arctic that are chartered
29 right here in town and they're not necessarily affected
30 by these restrictions. We're --

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1

2

Q Should they be?

3

A What we're after is these

4

routine flights that are just going back and forth.

5

The Taglu operation, I think, called for, oh up to five

6

or six flights a day -- both helicopter and twin otter.

7

That becomes quite a heavy usage over a prescribed route.

8

Normal charter operations are usually off in all directions

9

and the frequency of flight is much reduced. It could

10

be the situation where there's a lot of activity. Mr.

11

Webb's company when they were doing their work, at one

12

point, were probably running more flights than the

13

Imperial Oil was, for a while. A pollution of biologists

14

perhaps.

15

Q Do you think it necessary

16

that all flights be controlled in this way?

17

A No. I can see it applying

18

as the example I gave you on a thing like whooping cranes--

19

a very definite situation. There might be some

20

possibilities in a few critical areas, concentration of

21

colony nesting areas where I think to enforce more

22

than just our sanctuary permit stipulations on that would

23

be to request M.O.T.'s cooperation on height levels and

24

there is a lot of teeth in that.

25

Q Now, finally, sir I handed

26

Mr. Bayly earlier today a map on which I asked him to

27

get you to draw a route so that we'd have it before us.

28

Have you done that?

29

A I'll repeat my cynicism

30

about the maps that you're using, but, yes, they're here.

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1
2 it Q Subject to that and I
3 take/that as far as you're concerned, the Barry route,
4 as I can call it on that, is preferable to the cross-delta
5 proposal insofar as impact on birds is concerned.

6 A M-hm

7 Q You extend that to impact
8 on mammals and fish as well?

9 A I think so. Looking at it
10 here before me, I've gone more than just cross-delta.
11 I started way up past Oaks Point and connected up the
12 Dew Line sites as well. It crosses the delta perhaps a
13 little closer. It might even be shorter than the cross-
14 delta route. Maybe their economists might buy that. It
15 crosses Shallow Bay, it's still assuming that they have
16 to cross the delta. It crosses Shallow Bay in an area
17 which is outside of Dr. Sergeant's area of interest in
18 the whales. I think probably, from my experience in
19 trying to run a boat out through there, it's long, black
20 streaks of mud. It's too shallow for whales. It's further
21 in Shallow Bay it parallels it I would say, there's no
22 scale on this map about ten or fifteen miles further up-
23 stream or in Shallow Bay. It avoids some of the areas
24 that I was concerned about, especially staging waterfowl.
25 It avoids the whale area. I think with some request for
26 help from my compatriot Vern Hawley on the distribution
27 of muskrats and beaver, I think it will cross an area
28 that is not one of the prime areas for muskrats or beaver
29 through the delta. It follows that scrub willow route
30 that I was describing this morning.

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 Q Now, if I asked you to
2 compare the advantages of that route with the proposed
3 prime route of Canadian Arctic Gas in terms of impact
4 on birds, what would you say?

5 A To the prime route is, it's
6 with the exception of the stretch where I keep drumming
7 in along the already disturbed Dew Line seat -- sites,
8 in that fall staging area which has been well documented
9 by Dr. Gunn and so on. I can't get too excited about
10 impact on birds except with the exception of that North
11 Slope part.

12 Q So that the prime route
13 would be preferable to the Barry route?

14 A Very, very much so.

15 Q And would you extend that
16 preference to take in impact on mammals and fish as well,
17 or do you feel competent to do that?

18 A I don't know, I like to
19 fish for graylings so I would worry about crossing
20 graylings streams, but I think the fishery and biologists
21 and mammalogists can speak to that better than I can.

22 MR. GOUDGE: Thank you sir,
23 very much, sir. Those are all the questions I have of
24 this panel. I'm grateful for everybody's forbearance.

25 THE COMMISSIONER: Any re-examina-
26 tion?

27 MR. BAYLY: No re-examination, sir.

28 THE COMMISSIONER: Just one
29 question, Dr. Sergeant. You referred to -- this is --
30 you referred to "tribes of whales". What do you call that--

Percy, Grainger, Barry,
Stirling, Smith, Stein,
Sergeant,
Cross-Exam by Goudge

1 those 5,000 whales? Do you call them a herd or population,
2 or what?

3 WITNESS SERGEANT: I think
4 that they're called the Beaufort Sea population or stock.
5 Those words are used more or less synonymously.

6 Q And is the word "herd"
7 used?

8 A Yes. As occupying a defined
9 area, I think.

10 Q Then you threw in the word
11 "tribe" there.

12 A I was trying to get a sub-
13 grouping there and from what Dr. Stirling said about
14 other vertebrates, it's possible that those have traditional
15 behavior. It's a little hard to tell without some very
16 sensitive methods.

17 Q Well, thank you very much,
18 Dr. Grainger and Dr. Percy, Dr. Barry, Dr. Stirling,
19 Dr. Smith, Dr. Sergeant, Mr. Stein. We've had two very
20 densely packed days in which you've provided us with a
21 great deal of useful knowledge and we appreciate it very,
22 very much. I found it most helpful. So let me thank
23 you and wish you a pleasant flight down south in the
24 morning and I expect we'll see some of you again. So we'll
25 adjourn. I think we'll adjourn till ten in the morning,
26 so we can sleep in.

27 (PROCEEDINGS ADJOURNED TO FEBRUARY 12, 1976)
28
29
30

347
M835
vol.122

Berger Hearings

11 Feb., '76.

Mackenzie Valley Pipeline
BORROW Inquiry

347
M835
vol.122

CA1
Z 1
-74M21

MACKENZIE VALLEY PIPELINE INQUIRY

Government
Publications

IN THE MATTER OF APPLICATIONS BY EACH OF

(a) CANADIAN ARCTIC GAS PIPELINE LIMITED FOR A
RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS
CROWN LANDS WITHIN THE YUKON TERRITORY AND
THE NORTHWEST TERRITORIES, and

(b) FOOTHILLS PIPE LINES LTD. FOR A RIGHT-OF-WAY
THAT MIGHT BE GRANTED ACROSS CROWN LANDS
WITHIN THE NORTHWEST TERRITORIES

FOR THE PURPOSE OF A PROPOSED MACKENZIE VALLEY PIPELINE

and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND
ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION,
OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE
PROPOSED PIPELINE

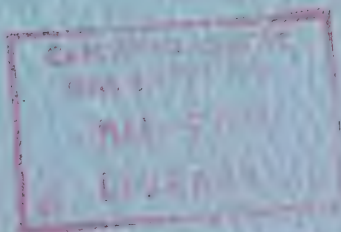
(Before the Honourable Mr. Justice Berger, Commissioner)

Inuvik, N.W.T.

February 12, 1976.

PROCEEDINGS AT INQUIRY

Volume 123



APPEARANCES:

Mr. Ian G. Scott, Q.C.,
Mr. Stephen T. Goudge,
Mr. Alick Ryder and
Mr. Ian Roland for Mackenzie Valley Pipeline
Inquiry;

Mr. Pierre Genest, Q.C.,
Mr. Jack Marshall, and
Mr. Darryl Carter for Canadian Arctic Gas
Pipeline Limited;
Mr. Reginald Gibbs, Q.C.,
Mr. Alan Hollingworth &
Mr. John W. Lutes, for Foothills Pipe Lines Ltd.;

Mr. Russell Anthony &
Pro. Alastair Lucas for Canadian Arctic Resources
Mr. Garth Evans Committee;

Mr. Glen W. Bell and
Mr. Gerry Sutton, for Northwest Territories
Indian Brotherhood, and
Metis Association of the
Northwest Territories;

Mr. John Bayly
or
Miss Leslie Lane for Inuit Tapirisat of Canada,
and The Committee for
Original Peoples Entitle-
ment;

Mr. Ron Veale and
Mr. Allen Lueck for The Council for the Yukon
Indians;

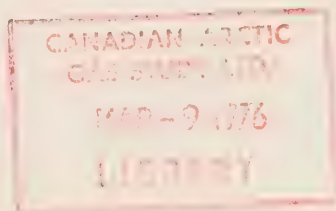
Mr. Carson H. Templeton, for Environment Protection
Board;

Mr. David Reesor for Northwest Territories
Association of Municipal-
ities;

Mr. Murray Sigler for Northwest Territories
Chamber of Commerce.

Mr. John Ballem, Q.C., for Producer Companys;

347
M835
Vol 123



I N D E X

Page

WITNESSES FOR MACKENZIE VALLEY PIPELINE INQUIRY:

A. Barry YATES

Larry ELKIN

- In Chief	18731
- Cross-Examination by Mr. Hollingworth	18753
- Cross-Examination by Mr. Evans	18755
- Cross-Examination by Mr. Bayly	18770
- Cross-Examination by Mr. Veale	18858

EXHIBITS:

457	Map showing Dr. Barry's route	18728
458	Table called "Aerial Seeding of Winter Roads & Rig Sites in Mackenzie Delta"	18728
459	Manuscript "Fishery Resources of the Western Arctic" by J.G.Hunter	18728
460	Binder "Gulf Oil of Canada Arctic Division, Oil Spill Action Plan for Land-Based Operations in Territorial Areas"	18729
461	Letter from Gulf Canada re proposed environmental program for 1976	18729
462	Letter from Gulf Canada re startup dates for wheeled traffic on winter roads, Lucas Point to Parsons Lake	18729
463	Statistics from Dept. of Social Development	18730
464	Qualifications & evidence of Yates & Elkin	18752

CANADIAN NATURAL
GAS STUDY LTD.

MAR-9 1976

LIBRARY

Inuvik, N.W.T.

February 12, 1976.

(PROCEEDINGS RESUMED AT 10:30 A.M.)

MR. GOUDGE: I have two or three matters to table before we begin with the next panel, the first of which was not formally tabled at the end of last evening but should be, is the map that Dr. Barry drew his own route on. I have it now marked out and perhaps it could be filed.

(MAP SHOWING DR. BARRY'S ROUTE MARKED EXHIBIT 457)

MR. GOUDGE: Then, sir, I have five separate filings sent to us by Mr. Ballem on behalf of his clients. The first is a document which was requested of Gulf Oil of Canada and is supplied by them, a study table called:

"Aerial seeding of winter roads and rig sites in the Mackenzie Delta Region, N.W.T."

I would like to file that for Mr. Ballem.

(TABLE CALLED "AERIAL SEEDING OF WINTER ROADS & RIG SITES IN THE MACKENZIE DELTA" MARKED EXHIBIT 458)

MR. GOUDGE: Then there are four other matters that he has forwarded for filing in response to requests that were made of his clients' witnesses when they were here. The first is a manuscript entitled:

"Fishery Resources of the Western Arctic" by J.G. Hunter.

(MANUSCRIPT "FISHERY RESOURCES OF THE WESTERN ARCTIC" BY J.G. HUNTER MARKED EXHIBIT 459)

1 MR. GOUDGE: The second is
2 a loose-leaf binder entitled:

3 "Gulf Oil of Canada, Arctic Division, Oil
4 Spill Action Plan for Land-based operations
5 in Territorial Areas."

6 (BINDER ENTITLED "GULF OIL OF CANADA, ARCTIC
7 DIVISION, OIL SPILL ACTION PLAN FOR LAND-BASED
8 OPERATIONS IN TERRITORIAL AREAS" MARKED EXHIBIT
9 460)

10 MR. GOUDGE: The third is a
11 letter from Gulf Canada outlining their proposed
12 environmental program for 1976.

13 (LETTER FROM GULF CANADA RE PROPOSED ENVIRONMENTAL
14 PROGRAM FOR 1976 MARKED EXHIBIT 461)

15 MR. GOUDGE: The fourth is
16 a letter from Gulf Canada indicating startup dates
17 for wheeled traffic on the winter road from Lucas
18 Point to Parsons Lake, so if I could file those four
19 documents, they are really filings by the producers.

20 (LETTER FROM GULF CANADA RE STARTUP DATES FOR
21 WHEELED TRAFFIC ON WINTER ROADS, LUCAS POINT
22 TO PARSONS LAKE, MARKED EXHIBIT 462)

23 MR. BAYLY: At your request
24 we have asked the Department of Social Development in
25 Yellowknife to send us statistics which came up in
26 our cross-examination of Dr. Hobart, and I have these
27 statistics for the various regions, requested both by
28 you and by Mr. Ballem for the producers, together
29 with a copy of a letter addressed to Gail Noble of
30 COPE, which is directed to you as well with regard to

1 these statistics, as in some cases they don't appear
2 to be exactly what we asked for but it's what's avail-
3 able.

4 THE COMMISSIONER: All right,
5 yes, those should be marked.

6 (STATISTICS FROM DEPT. OF SOCIAL DEVELOPMENT
7 MARKED EXHIBIT 463)

8 THE COMMISSIONER: Mr. Marshall,
9 before you arrived we asked Dr. Barry to indicate on
10 the map the route that he would propose for the gas
11 pipeline to cross the delta. He had a number of other
12 points he made about the route your clients chose.
13 We asked Mr. Carter to make sure those matters were
14 brought to the attention of your witnesses so they
15 could comment on them next week.

16 I only take the liberty of
17 raising it now because Mr. Carter, in his anxiety to
18 get off to Mexico, might not at the airport last
19 night have made you fully aware of all of these
20 matters. So at any rate you might start with Dr.
21 Barry's map and then go back to Dr. Barry's written
22 evidence. At any rate, I'm sure you will, so --

23 MR. GOUDGE: This completes
24 the preliminary matters. The next panel of witnes-
25 ses consist of Messrs.

26 Barry Yates and Larry Elkin. Their presence has been
27 expedited by us and they will be addressing the
28 regional planning process proposed for the Mackenzie
29 Delta region to deal with development consequential on
30 the expansion of hydrocarbon or other matters that may

Yates & Elkin
In Chief

1 go on in the delta. I would like, if I may, sir, to
2 introduce and qualify them to you.

3

4

A. BARRY YATES,
LARRY ELKIN, sworn:

5

6

DIRECT EXAMINATION BY MR. GOUDGE:

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

Q First Mr. Yates, sir,
you're at present the Director of Northern Policy and
Program Planning Branch, Northern Affairs Program,
Department of Indian Affairs & Northern Development,
is that correct?

WITNESS YATES: That is correct.

Q And you were educated first
at the University of London, England, in 1952 in
engineering and later in military engineering at the
University of Glasgow.

A In reverse order, actually.

Q I'm sorry; and then from
1942 to 1952 you were in the Corps of Royal Engineers
of the British Army, and came to Canada thereafter.

A That's correct.

Q And you joined the
Department of Northern Development in Ottawa in 1959,
first as assistant head, and then as chief engineer
of the Northern Administration Branch.

A Yes.

Q And then, sir, I take it
in 1966 you left the technical field but continued
working on northern matters as assistant director of
the Northern Administration Branch, and then as

Yates & Elkin
In Chief

1 director of the Territorial Relations Branch.

2 A That's correct.

3 Q And in 1969 you became
4 the director of the Northern Economic Development
5 Branch.

6 A Yes.

7 Q And in 1973 the first
8 director of the newly established Northern Policy &
9 Program Planning Branch.

10 A Yes.

11 Q And that's your present
12 position, sir.

13 A That's correct.

14 Q Now Mr. Elkin, you're
15 at present, as I understand it, the Director, Department
16 of Planning & Program Evaluation, Government of the
17 Northwest Territories.

18 WITNESS ELKIN: That's correct.

19 Q And you were educated
20 first at the University of Saskatchewan in geological
21 engineering, and thereafter in business administration
22 and public administration at the Universities of
23 Saskatchewan and Carleton.

24 A That's correct.

25 Q And you've held a variety
26 of positions and I take it if we can start at about
27 1966, you became area administrator, Department of
28 Indian Affairs & Northern Development at that time
29 in Rankin Inlet.

30 A It was at Coral Harbour

Yates & Elkin
In Chief

1 first.

2 Q I see, and then Rankin
3 Inlet?

4 A And then Rankin Inlet,
5 that's correct.

6 Q And from 1967 to October,
7 '68 you were assistant regional administrator,
8 Baffin Region, Department of Indian Affairs & Northern
9 Development. Is that correct?

10 A That's correct, yes.

11 Q And you've held a
12 variety of positions, I take it, in the Government
13 of the Northwest Territories since that time and in
14 July, 1973 you became director, executive-secretary,
15 Government of the Northwest Territories.

16 A That's correct.

17 Q And when, sir, did you
18 assume your present position of director, Department
19 of Planning & Program Evaluation?

20 A The Department was
21 re-organized in August, although many of the roles
22 that we now carry out we carried out before as well.

23 Q So that as of August,
24 1975, you assumed your present position.

25 A That's correct.

26 Q Now gentlemen, if you
27 would turn to your prepared evidence, I've distributed
28 copies of this, Mr. Commissioner; let me begin by asking
29 you what are the responsibilities of you both relative
30 to regional planning in the Mackenzie Delta?

Yates & Elkin
In Chief

WITNESS YATES: Well, Mr.

Commissioner, we are co-chairmen of the Federal-Territorial Regional Planning Committee for the Mackenzie Delta. This committee is part of the system of committees which are known as the Advisory Committee on Northern Development, which reports to the Minister of Indian Affairs & Northern Development. The Regional Planning Committee was established early in 1975 and met for the first time in April, 1975. A list of the current membership has been attached to the summary of evidence.

Q Mr. Yates, that is the first document that is attached at the end of your prepared evidence?

A That is correct.

Q Headed:

"Membership of the Federal-Territorial Regional Planning Committee for the Mackenzie Delta."

A That's correct.

Q Then, sir, what's the background to this initiative?

A Well, the Department of Indian Affairs & Northern Development and the Government of the Territories have been involved, of course, in planning in the north for many years. It's been required for many of the existing communities, for those which have undergone substantial expansion such as Yellowknife, or for completely new communities as in the case of Inuvik. On a broader scale, planning has also been required in the fields of

Yates & Elkin
In Chief

1 transportation, communications, health, education,
2 and so on. Both governments have been involved of
3 necessity because of the differing responsibilities.

4 At the same time, local
5 consultation has been an important element in these
6 planning efforts. In the case of the Mackenzie Delta,
7 however, because of the duration, scope and extent of
8 the possible local impacts of proposed oil and gas
9 development, it seemed apparent that particular efforts
10 would be required for integrated planning and
11 community participation. The two governments each
12 made policy commitments to this regional planning
13 approach, with a view to possibly extending the
14 experience beyond the delta to other parts of the
15 N.W.T. The effort of regional planning does indeed
16 carry a high priority with both governments.

17 Q Sir, on what basis were
18 the boundaries of the Mackenzie Delta region defined?

19 A For the purposes of
20 preparing the regional plan, the Mackenzie Delta
21 region was defined to include the five communities
22 of Aklavik, Arctic Red River, Fort McPherson, Inuvik
23 and Tuktoyaktuk. This particular region was chosen
24 because it is likely to be the region of most
25 intense oil and gas development activity, and is likely
26 to be the area of greatest impact. This, of course,
27 is not to say that there will not be impact in other
28 communities in the valley or on the coast, or that
29 no planning is required there. Indeed, we have to
30 give serious consideration to ways by which a

Yates & Elkin
In Chief

1 comprehensive planning framework might be instituted
2 in other regions of the Territories.

3 Q Then sir, what is
4 regional planning?

5 A Well, planning is a
6 process through which people make use of whatever
7 tools or instruments available to them to achieve
8 their goals and objectives. For example, communities
9 often have town plans which indicate the sort of
10 community that people would like to have in the future
11 and what will be done to reach that objective. Town
12 plans frequently indicate to what level the people
13 wish the community to grow, what kind of jobs they
14 would like to have in the future, what new industry
15 should be established, where new industry or new
16 houses should be established, what steps the community
17 is going to take to attract certain things that are
18 wanted, and what steps they're going to take to dis-
19 courage things that they do not want. Regional
20 planning is simply an extension of this idea to an
21 area which includes more than one community, and to
22 the area between those communities.

23 The characteristics of the
24 type of regional planning we are looking towards are
25 generally, first an opportunity for community
26 participation in the planning process, bringing the
27 planning activities together to facilitate contact
28 between community groups and planners. I should just
29 comment that this is not a general characteristic
30 of regional planning as such. It's one that we consider

Yates & Elkin
In Chief

1 particularly important in this case.

2 Secondly, to provide a focus
3 for planning where planning activities already exists
4 but is diffused among a number of departments and
5 levels of government. In these circumstances regional
6 planning provides an umbrella to integrate planning
7 activities and ensure that the planning is comprehen-
8 sive.

9 Thirdly, to provide planners
10 and community groups with an overview of planning
11 activity at each point in time. This allows planning
12 to proceed in an initiative manner rather than a
13 reactive manner.

14 Q Sir, what's the product
15 of this regional planning?

16 A Well, I've contemplated
17 by the Department and the Territorial Government it
18 should be seen as a process of inter-action between
19 elected officials, government planners, administrators
20 of government programs, and the people in the region
21 to achieve a balanced plan for future economic and
22 social development. The purpose of creating a local
23 Regional Planning Committee is to provide a focus
24 for this local input to the plan and not to introduce
25 a new level of government. Its role is advisory and
26 not legislative. The objective is to produce a
27 written plan for economic development activities,
28 employment for local people, provision of local govern-
29 ment infrastructure, and social services, management
30 of land use, maintenance of community values and so

Yates & Elkin
In Chief

1 forth. However, it's seen as a continuing process
2 and any plan that is prepared has to be flexible and
3 responsive to changes as circumstances warrant, taking
4 into account the views of all who are involved in the
5 process. An overall plan proposed by government
6 planners will be subject to change to take into
7 account the views of the various interest groups who
8 look at the plan as a whole.

9 Q What has been done to
10 institute this process in the Mackenzie Delta?

11 A The first step was the
12 creation of the Federal-Territorial Regional Planning
13 Committee for the Mackenzie Delta. At the first of
14 three meetings of this Committee, the highest priority
15 was placed on forming an Advisory Committee of
16 representatives of the delta communities. Again
17 there's a chart attached to the summary which is
18 the second chart, which shows the organization
19 structure -- I'm sorry, it's the third piece,

20 "Mackenzie Delta Regional Planning Committee
21 Structure,"
22 which shows the structure of this process that now
23 exists.

24 In creating the organizational
25 context for regional planning, a number of factors
26 were taken into account. First there was a division
27 of responsibility between the Federal and Territorial
28 Governments . For example, while most aspects of
29 social and local economic planning are undertaken
30 by the Northwest Territories Government, responsibility

Yates & Elkin
In Chief

1 for transportation, communications, land use planning
2 rests primarily with Federal Government Departments.
3 While it is the function of the A.C.N.D. (the Advisory
4 Committee on Northern Development) to bring these
5 together, it's outside the operational framework of
6 the A.C.N.D. to do so on a day to day basis. Regional
7 planning provides an organizational framework within
8 which this can be accomplished.

9 There are three committees
10 involved in the development of the regional plans
11 for the delta. The Federal-Territorial Regional
12 Planning Committee, which is the senior committee,
13 the Territorial Regional Planning Committee, and the
14 Regional Planning Committee. The first of these is
15 the senior one which I have mentioned, is co-chaired
16 by the Department and the Government of the Northwest
17 Territories, myself and Mr. Elkin.

18 As can be seen from the chart,
19 membership consists of representatives from the
20 departments concerned of the Government of the
21 Northwest Territories and from a number of Federal
22 Departments. The function of this committee is to
23 direct the preparation of a development plan to cope
24 with the impact of development triggered by oil and
25 gas development in a manner consistent with Federal
26 and Territorial Government objectives and priorities.

27 The Territorial Regional
28 Planning Committee is comprised of representatives
29 from departments of the Territorial Government --
30 Social Development, Economic Development, Education,

Yates & Elkin
 In Chief

Local Government, and Natural & Cultural Affairs, as well as the assistant regional director in Inuvik. Its function is to co-ordinate planning within the Territorial Government, and I should mention there is an informal federal body somewhat similar to this where we meet together to discuss the federal side in the same way as this is done territorially.

The Regional Planning Committee acts in an advisory capacity to the Federal-Territorial Regional Planning Committee, providing a basis for local input and feedback to the regional planning process. This committee is still in the early stages of development and has undergone some changes in structure since its inception. Initially the committee consisted of one representative nominated from the elected councils of each of the five delta communities, plus ex-officio members from the Territorial Council, the Committee for Original Peoples Entitlement, the Indian Brotherhood, and the Metis Association of the Northwest Territories. As a result of recent discussions within the committee, the committee in consultation with the government, have indicated their desire to increase the community representation from one to two, to be chosen in a manner to be decided independently by each community participating. Although the ex-officio members have no vote, they participate in all Regional Planning Committee meetings and discussions.

The committee currently has one full-time staff position, which is as yet unfilled,

Yates & Elkin
In Chief

1 which will be located in Inuvik and an annual budget
2 of \$55,000 which is broken down as follows:

3 Staff salaries and benefits - \$35,000

4 Office & equipment rental - \$ 5,000

5 Staff travel - \$ 5,000

6 Association travel & honorariums
- \$10,000.

7 Q Then, sir, why does
8 the Regional Planning Committee not have decision-
9 making power?

10 A The committee has not
11 been established as a new tier of governm ent , but
12 is rather to provide a mechanism for an examination
13 of planning alternatives by local people and a focus
14 for local input. As such, the responsibility for
15 making decisions remains unchanged, although the
16 quality of these decisions is expected to be improved
17 as a result of the broader input and the more compre-
18 hensive examination of alternatives available to
19 the decision-makers through the work of the Regional
20 Planning Committee.

21 Q What work has been under-
22 taken within this organizational structure?

23 A Regional planning for
24 the delta takes as its starting point two basically
25 different planning scenarios. One envisages extensive
26 oil and gas development including gas plants, the
27 gas pipeline, continuing seismic and exploration
28 activity, the possible oil pipeline, and related
29 infrastructure developments. Another scenario envis-
30 ages no oil and gas development over the planning

Yates & Elkin
In Chief

1 period. Major factors which determine which scenario
2 will be realized in the delta are questions of national
3 policy, and as such are not within the scope of the
4 regional plan. However, because the possibility of
5 a pipeline is very real, and the potential impact
6 for such developments are great, primary attention
7 in the early stages has been focused on the situations
8 which would occur if there were to be a pipeline.

9 Oil and gas developments
10 proposed for the delta, if they are adopted, will pre-
11 sent difficult choices for planners and for residents
12 of the region. Fundamental tradeoffs in realizing the
13 objectives of maximizing benefits and minimizing of
14 social disruptions are one of these choices. This
15 could involve major decisions concerning infrastructure
16 investment such as the expansion of Inuvik, develop-
17 ment of port facilities on the Arctic Coast, the
18 siting and construction of airports and roads in the
19 region, and the extension of communication facilities.
20 In addition planning will be required to determine
21 how and to what extent local industry should be
22 encouraged, how social services should be extended,
23 and what demands will be made on the education system.
24 At the same time questions may arise concerning the
25 development of resources other than oil and gas in
26 the region, and in reserving options for the pursuit
27 of traditional hunting, fishing and trapping activities.

28 Staff work on preparing the
29 regional plan began in mid-1975, with the identifica-
30 tion of proposed developments in the delta region, and

Yates & Elkin
In Chief

1 the scope for varying the socio-economic impact on the
2 people of the region.

3 Early work concentrated on
4 isolating possible combinations of events which, for
5 the sake of convenience, we have called "options".
6 We recognize this isn't perhaps the best word. In
7 addition, attention was focused on preparing the
8 data base, including such matters as existing infra-
9 structure capacity, school enrolment, and the present
10 government plan to increase the capacity and so on.
11 Combinations of events corresponding to four general
12 levels of impact were identified and discussed. At
13 the same time, contact was made by the Government of
14 the Northwest Territories, Department of Local
15 Government , with the Community Councils of five
16 communities of the delta to establish a local Regional
17 Planning Committee which would serve as a focus for
18 obtaining local input to the plan. This committee
19 met for the first time in November and chose to
20 invite COPE and the Indian Brotherhood of the North-
21 west Territories to join the committee as ex-officio
22 members. Also at this first meeting committee members
23 were presented with some of the staff papers which had
24 previously been considered strictly for discussion
25 purposes by the Federal-Territorial Regional Planning
26 Committee.

27 Shortly after, some members
28 of the local committee, accompanied by some staff from
29 COPE, the Government of the Northwest Territories and
30 the Department, travelled to Alaska to consider at

Yates & Elkin
In Chief

1 first hand the impact of the Alyeska Pipeline. In
2 January regional planning staff from the Government
3 of the Northwest Territories and the Department, at
4 the request of the Regional Planning Committee in
5 the delta, made a presentation in each community
6 based on some of the staff work which had been passed
7 to the Regional Planning Committee.

8 Q Sir, what particular
9 studies are being done?

10 A Since 1975, when staff
11 work by both governments was put in hand, a number of
12 studies have been undertaken. In the transport and
13 communications areas, inventories of existing facili-
14 ties have been completed and work is in hand to
15 examine the implications in terms of infrastructure
16 requirements for various combinations of events.
17 Similarly, in the social development ~~and~~ education areas,
18 inventories of existing programs and facilities are
19 now complete, with work under way to examine the
20 implications of the combinations of events.

21 Work on land use has concen-
22 trated on identifying from existing land use information
23 maps and other sources present land uses and terrain
24 sensitivity in the region. At the same time the
25 regions' economic capability has been inventoried
26 and an alternative program for economic development
27 are being studied. Parallelling this, an examination
28 of energy requirements in the region has been under-
29 taken which will serve as a basis for an overall study
30 of how energy should be supplied to the region.

Yates & Elkin
In Chief

1 Finally, a demographic employ-
2 ment projection models have been developed to provide
3 a statistical background for planning. Currently work
4 is in hand at the committee level to obtain general
5 agreement regarding the suitability of the currently
6 identified combinations of events for planning purposes
7 and staff work is proceeding on a broad front to
8 assist in a general way costs and benefits associated
9 with the combinations.

10 Q What are the principal
11 elements of the combination of events put up for
12 comment?

13 A Attached to the material
14 is a chart which shows how the combination of events
15 was outlined for discussion purposes.

16 Q That's the last chart,
17 I take it.

18 A That's the chart titled:
19 "How Delta Communities would be affected by
20 the various options."

21 Two of these are based on
22 pipeline development with minimum impact and maximum
23 impact, and are not being further developed at this
24 time. Of the remaining three combinations of
25 events, one envisages no major oil and gas development
26 in the period to 1985, while the other two envisage
27 major oil and gas developments with low and medium
28 impact. The local Regional Planning Committee has
29 also been asked to consider the various combinations
30 of events which have been identified, not with a view

Yates & Elkin
In Chief

1 to making an absolute choice between options, but
2 rather to indicate those elements of each combination
3 of events they would wish the regional planning staff
4 to explore further.

5 THE COMMISSIONER: Excuse
6 me, Mr. Yates. Two options based on pipeline develop-
7 ment with minimum impact and maximum impact. I don't
8 want to sound stupid, but is that Foothills and Arctic
9 Gas?

10 A No sir. These are
11 the definition of "minimum" and high impact is the
12 impact on the communities, if indeed things are allowed
13 to run without any control whatsoever, that's what
14 we would call high impact; and low impact is the
15 same thing at the absolute other end of the extreme.
16 So for the purposes of our staff work, we have selec-
17 ted, recognizing that the people in the communities
18 have not had sufficient opportunity to really become
19 acquainted with what these options involve, we have
20 chosen the middle ones to proceed on for planning
21 purposes.

22 MR. GOUDGE: Q Then, sir,
23 you were referring to the remaining three combinations
24 of events.

25 THE COMMISSIONER: Well, excuse
26 me, so that both models in a sense could be superimposed
27 on either Arctic Gas or Foothills?

28 A That's right. The
29 third one, Mr. Goudge, is the no development option.

30 MR. GOUDGE: Sorry.

Yates & Elkin
In Chief

1 Q Could you carry on,
2 please?

3 A I think we would want
4 to stress that the staff work that is being carried on
5 currently is for discussion purposes only, and it should
6 not be construed as representing any decisions on
7 the part of government. The very purpose of it is
8 to provide information to the communities so that they
9 may share in shaping these proposals.

10 Eventually an overall plan
11 would be drafted, incorporating the components in
12 light of the advice on them to the different communi-
13 ties. This draft plan would then form the basis of
14 further discussions before any proposals are finalized.

15 The options selected the
16 components of the plan, and the overall draft plan
17 itself will be an amalgam of the different points
18 of view -- the view of the communities, of the
19 various interest groups, and of the policies of
20 Federal and Territorial Governments as they can be
21 interpreted and applied in the delta region. Just
22 to summarize, the sequence of events in the regional
23 planning process has been Phase 1, to formulate a
24 hypothetical combination of events, which we have
25 called options, and indicate those which are compatible
26 with the Federal and Territorial objectives of the
27 north.

28 Phase 2, to assess the
29 relative advantages and disadvantages of these combin-
30 ations of events.

Yates & Elkin
In Chief

1 phase 3, to evaluate the
2 outcome and formulate new combinations of events to
3 reflect revealed preferences.

4 Phase 4, initiate preliminary
5 planning for the combination of events selected by
6 that process.

7 Initially we had hoped to
8 complete Phases 1 to 3 by March 31st of this year.
9 This is not a firm deadline, it simply coincides with
10 the end of the fiscal year, and that is the reason
11 why it was chosen. But it can be modified as necessary
12 to accommodate any input during the process.

13 The pace, however, should be
14 governed by the desirability for planning potential
15 developments far enough in advance to implement
16 decisions so that development, if it occurs, will be
17 orderly and will conform with good planning.

18 Q Sir, is there a deadline
19 for a final plan?

20 A There will probably never
21 be a final plan. Some parts of it must be decided in
22 time to implement decisions. For example, land develop-
23 ment in Inuvik, if needed, would require considerable
24 lead time because of permafrost conditions. Other
25 parts of it will remain subject to change, as circum-
26 stances change.

27 Q How does this relate to
28 the Mackenzie Valley Pipeline Inquiry?

29 A We expect that the
30 recommendations of the Inquiry will be of major

Yates & Elkin
In Chief

1 importance both in influencing attitudes and in recomm-
2 ending specific terms and conditions to be imposed if
3 the trunk pipeline is approved. These recommendations
4 will be taken into account in all regional planning
5 for the delta.

6 Q How does the regional
7 planning process relate to the government's considera-
8 tion of the applications for proposed gas plant and
9 gathering system facilities?

10 A The government is
11 reviewing these applications under another committee
12 of the A.C.N.D., which is known as the Mackenzie
13 Delta Development Committee. There are three separate
14 groups under this committee which are reviewing first,
15 the environmental impact; second, the technical aspects;
16 and third, the socio-economic impact. As well, the
17 environmental aspects have been referred to the
18 environmental assessment and review process, the
19 EARP process for short, with the Minister of the
20 Environment, which has been described to the Inquiry,
21 I believe.

22 These reviews will result
23 in publication of reports and will lead to the
24 establishment of terms and conditions for any approval
25 of the applications. I think we have made avail-
26 able to you a list of the materials provided in
27 connection with these reviews for information. If
28 that's not correct, I would like to be corrected on
29 that and will make them available.

30 It was recognized quite

Yates & Elkin
In Chief

1 early in these reviews that it was insufficient to
2 examine the socio-economic impact of the proposals
3 in isolation from the trunk line exploration and other
4 anticipated developments, if a trunk line is approved.
5 Accordingly, it was decided that the socio-economic
6 assessment, which was assumed as a responsibility by
7 the Government of the Northwest Territories, would
8 be completed on a limited basis, and that further
9 consideration of the gas plant proposals would be
10 referred to the regional planning process.

11 A limited appraisal of the
12 gas plant proposal is being finalized and will be
13 referred to the Inquiry for information as soon as
14 it is available.

15 Q Sir, what is the
16 relationship between the regional planning process
17 and the Territorial Council?

18 A As I mentioned earlier,
19 the two Territorial councillors from the Mackenzie
20 Delta are ex-officio members of the Regional
21 Planning Committee in the delta. A report on the
22 regional planning process has been submitted to the
23 Territorial Council for its consideration at the
24 current session. The planning staff of both govern-
25 ments will be looking to the Territorial Council for
26 advice on future directions which regional planning
27 might take in the Northwest Territories.

28 Q Then, sir, what is
29 the relationship to the settlement of native land claims?

30 A Any proposals on a regional

Yates & Elkin
In Chief

1 plan and any decision to be taken on it later are
2 to be formulated on the basis that they are without
3 prejudice to any right, title or interest of the
4 native people to lands in the delta. Obviously, the
5 management of land in the delta will be greatly
6 affected by the outcome of land claims negotiations
7 to which the Government of Canada is fully committed.
8 It is clearly not intended that regional planning
9 will pre-judge the outcome of native land claims
10 negotiations. It is felt, however, by the Federal
11 and Territorial Governments, that planning for even-
12 tualities is essential, that it must be comprehensive,
13 and that it must involve the participation of the
14 people of the communities of the delta to the fullest
15 extent to which they wish to participate.

16 MR. GOUDGE: Thank you, sir.
17 That, Mr. Commissioner, completes the evidence in chief
18 of this panel. I have their curricula vitae which I
19 would like to table with the Inquiry, and I should
20 also, of course, say that it's apparent that both
21 Mr. Yates and Mr. Elkin are government employees and
22 they adopt the statement which I read into the record
23 some months ago applicable to such employees. I read
24 it in on September 26, 1975. This panel then, sir,
25 is available for cross-examination. I don't know if
26 you want to break for coffee first or whether you want
27 to begin.

28 THE COMMISSIONER: What time
29 is it?

30 MR. GOUDGE: It's 11 o'clock.

Yates & Elkin
In Chief

1 THE COMMISSIONER: We'll break
2 for coffee then.

3 (QUALIFICATIONS & EVIDENCE OF YATES & ELKIN
4 MARKED EXHIBIT 464)
5 (PROCEEDINGS ADJOURNED AT 11 A.M.)
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
~~23~~
24
25
26
27
28
29
30

Yates & Elkin
Cross-Exam by Hollingworth

1 (PROCEEDINGS RESUMED AT 11:20 A.M.)

2 MR. GOUDGE: Sorry, sir, I
3 think we're prepared to reconvene and Mr. Yates and Mr.
4 Elkin are available for cross-examination.

5 MR. MARSHALL: I'm not sure of
6 the batting order for cross-examination, but perhaps
7 it doesn't matter. I have no questions of these two
8 witnesses.

9
10 CROSS-EXAMINATION BY MR. HOLLINGWORTH:

11 Q Gentlemen, on page 10 of
12 your evidence, there's reference made to a number of
13 studies being undertaken. Have any reports
14 been generated from these studies as yet?

15 WITNESS ELKIN: I don't
16 believe we can give you a precise figure just offhand.
17 None of these studies have been completed yet to this
18 point. There are a very large number in progress at
19 this time, but exactly what number that is, I do not
20 know.

21 Q Do you know when they will
22 begin to be completed? When the trickle might start?
23 The flood.

24 A I would expect that they
25 will start -- some of them will be completed by about
26 March, but I wouldn't expect any to be completed before
27 that time.

28 Q And is it anticipated
29 making these available to the participants in the
30 Inquiry through Commission counsel?..

Yates & Elkin
Cross-Exam by Hollingworth

1 WITNESS YATES: I think if
2 I might answer that, we'd be glad to make them available.
3 I think we would first however like to let them go be-
4 fore the Regional Planning Committee and then subsequent-
5 ly to come to the Inquiry. What we're trying to avoid
6 I think you can appreciate in this process is the
7 assumption that government has done studies and made
8 up its mind and here it is, and now we just want you
9 to look at this and do the old fashioned sort of con-
10 sulting if you like. So we're anxious to put these
11 studies forward to the Planning Committee as tentative
12 studies for further input, and subsequent to that in-
13 put of course, at that point in time we'd be very glad
14 to make them available to the Inquiry.

15 Q Well, that's interesting sir
16 but my only concern there is that I just wonder when you
17 might contemplate when they might be available after
18 that process to the Inquiry since the socio-economic
19 phase is anticipated to begin toward the end of March.

20 A I think I might be subject
21 to correction by Mr. Elkin. I would see no objection
22 to making them available to the Inquiry the day after
23 if you like they'd be made available to the Regional
24 Planning Committee.

25 Q But you can give me no
26 specific date as to when that--

27 A It depends which one we're
28 talking about. I believe the demographic study is pretty
29 well complete right now and might be available. On the
30 other hand the one dealing with the energy requirement

Yates & Elkin
Cross-Exam by Hollingworth
Cross-Exam by Evans

1 has not yet commenced and it will not be completed
2 before the end of the year.

3 MR. HOLLINGWORTH
4 Thank you gentlemen. Those
5 are all the questions I have.

6 MR. EVANS: I believe sir, it
7 is my turn.

8 CROSS-EXAMINATION BY MR. EVANS

9 Q Mr. Yates I would like to
10 refer you to an article you had published in Nature
11 Canada in July/September of 1972, called "Energy" in
12 Canada's North, The Search For Oil and Gas". I have
13 a copy if you'd like to refer to it.

14 WITNESS YATES: Thank you.

15 Q On page 13 of that article
16 about half way down the page there's a quote that I've
17 marked. You said there that, "drilling in the Arctic
18 offshore in ice covered waters has not yet been attempted
19 and will not be permitted until adequate drilling
20 systems have been developed which will reduce the
21 possibility of environmental damage to negligible pro-
22 portions."

23 THE COMMISSIONER: Excuse me
24 Mr. Evans would you wait a minute. I think-- I have a
25 copy of that and I'd just like to have it before me.

26 MR. EVANS: It is on page
27 13 of the article Mr. Commissioner.

28 THE COMMISSIONER: Sorry,
29 what paragraph was that again.

30 MR. EVANS: It's-- Well it's
about half way down and it's just above the title em-

Yates & Elkin
Cross-Exam by Evans

1 ployment. It begins " drilling in the Arctic offshore..."

2 THE COMMISSIONER: Oh yes.

3 MR. EVANS: I wonder if you
4 could comment on that Mr. Yates , on whether or not you
5 think that statement is still true.

6 WITNESS YATES: At the time
7 the statement was made it was following the issue of
8 oil and gas exploration permits, in the Arctic offshore,
9 following the sale of the bonus work block in the
10 Beaufort Sea, following the passage of the Arctic Waters
11 Pollution Prevention Act, and following a meeting of the
12 responsible government officials to determine what work
13 might need to be done to prepare for such drilling in
14 the Arctic offshore. I can't recall precisely now
15 whether this article was written before or after the
16 government industry seminar of December 1972.

17 Q I would assume it would
18 be before, as it was published in July/September of 1972.

19 A Yes, I think that's prob-
20 ably correct. Well as you know at that time I believed
21 that statement was true and I think it is still true with
22 respect to the intent that it conveys. At this point
23 however, substantial work has been done since 1972, both
24 by government and industry with respect to the technical
25 aspects of drilling in the offshore, with respect to the
26 environmental concerns, and with respect to other feat-
27 ures pertaining to the Arctic Waters Pollution Prevention
28 Act.

29 Q Specifically Mr. Yates,
30 I'm interested in whether or not the government's policy

Yates & Elkin
Cross-Exam by Evans

1 has been changed, in other words, now permits have
2 been issued to drill offshore and I wonder whether or
3 not consideration was given to reducing the possi-
4 bility of environmental damage to negligible proportions,
5 when this was done or whether you've raised the standard
6 since then.

7 THE COMMISSIONER: You
8 mean lowered the standard.

9 MR. EVANS:

10 Q Yes, well lowered the
11 standard. It depends on how you look at it.

12 A Well then what you are
13 sort of questioning is a qualitative judgement. I would
14 have to say that the cabinet in July 1973 reached the
15 conclusion that the risks whilst not non-existent, in
16 other words, the risks whilst existent were sufficiently
17 negligible to permit approval in principal for drilling
18 to take place in the Beaufort Sea, and at that time
19 the cabinet agreed to accept the terms and conditions
20 for Arctic offshore drilling as proposed in a very de-
21 tailed format of approval in principal and application
22 for drilling authority, and it gave direction that
23 studies of potential environmental problems associated
24 with that program should be hastened so that it's prin-
25 cipal observations and conclusions would be available
26 before drilling commences, and I think you're probably
27 aware that that was the Beaufort Sea project that was
28 embarked upon at a cost of some 12 million dollars, and
29 the results of that program on the environmental side
30 are now available, are being considered by the Arctic
Waters Oil and Gas Advisory Committee, which is expected

Yates & Elkin
Cross-Exam by Evans

1 to propose to the minister appropriate terms and
2 conditions that might be attached to a drilling auth-
3 orization. That's the situation as I understand it.

4 Q Right.

5 THE COMMISSIONER: Excuse
6 me Mr. Yates. The Arctic Waters Oil and Gas Committee
7 is as I understand it, is considering the appropriate
8 terms and conditions for the two wells that Dome pro-
9 poses. Is that-- have I got that right ?

10 A Yes. Perhaps I moved
11 a bit quickly over that. Dome were the-- one of the
12 early companies to be granted approval in principal,
13 to drill on those two-- to drill those two wells.
14 Subsequent to that they carried out the work necessary
15 to meet the technical requirements of the approval in
16 principal, and the application itself.

17 In the fall of last year they
18 submitted their application, complete with the back-up
19 material required by the approval in principal document.

20 The technical aspects of that
21 have been undergoing examination since, by the technical
22 experts. In so far as the environmental issues were
23 concerned the Beaufort Sea project was not completed
24 by the fall of last year and therefore it was decided
25 that no action could be taken on the application for
26 the drilling authority until such a time as the
27 Beaufort Sea project reports were in. They're now in,
28 so that condition is met. I understand that substantial-
29 ly there is no problem with the technical material
30 attached to the application by Dome so therefore the

Yates & Elkin
Cross-Exam by Evans

1 remaining issue is the -- concerns the environmental
2 conditions that would have to be attached to a drilling
3 authorization.

4 MR. EVANS:

5 Q I just wondered-- you
6 spoke of the term, negligible. Now is that in your mind
7 a relative term or an absolute term, and in whose
8 estimation was the environmental risk, negligible ?

9 A I think I would have
10 to say that the July 1973 decision of cabinet sets the
11 environmental risk as -- my words are negligible, that's
12 not of course cabinet's words. I can't recall precisely
13 how that was expressed, but acceptable risk I think is
14 the term that was used.

15 Q Acceptable risk as
16 opposed to negligible risk.

17 A I presume so.

18 Q In other words they
19 might be prepared to accept something more than negli-
20 gible.

21 A Well, that's a judgement
22 that I am unable to make. The distinction that you're
23 making there between the words can have different
24 interpretations by different people.

25 MR. EVANS: Yes, that's fair
26 enough. Thank-you very much Mr. Yates. Now I wondered,
27 there seems to be some confusion in some people's mind
28 at least about the meaning of this term, approval in
29 principle. I wonder if you could-- maybe if you could
30 explain the various stages involved in the approval of
a project, of this nature and then maybe elaborate on

1 the meaning of the term approval in principle.

2 THE COMMISSIONER: Well,
3 before Mr. Yates does that, I don't want anyone to think
4 that this Inquiry is going to pass judgement on the
5 propriety of allowing Dome to go ahead with these two
6 exploration wells this summer. It is for the government
7 to decide whether these two exploration wells should go
8 ahead. My job is to examine the impact of the construct-
9 ion of the proposed gas pipeline. The assumption made
10 in the pipeline guidelines is that a gas pipeline would
11 be followed by an oil pipeline. My job is to examine
12 that impact in all its ramifications. If you build the
13 pipelines you will have to fill them with oil and gas.
14 We have been told by the industry that there will be
15 a proliferation of oil and gas development in the
16 Mackenzie Delta and into the Beaufort Sea. It is the
17 long term impact that concerns the Inquiry. Let me
18 illustrate what I mean. We have been listening to
19 evidence about the long term impact. We have been told
20 ^{there} there is an environmental price tag. Dr. Sergeant, who
21 it is said knows more about white whales than anyone
22 else in Canada, says that unlimited oil and gas devel-
23 opment in the Mackenzie Delta will drive the white
24 whales from the calving grounds in the warm waters of
25 the delta. That will, he says. Maybe he's right, maybe
26 he's wrong. We want to hear the other side. He says
27 that will in the long term result in the extinction
28 of the whole of the population of white whales in the
29 Beaufort Sea, some 5000 animals. That is the price,
30 Dr. Sergeant says, of unlimited oil and gas development

Yates & Elkin
Cross-Exam by Evans

1 in the Beaufort Sea, and he says that to save them--
2 to save the Beaufort Sea whale population we must
3 establish a whale sanctuary in the Mackenzie Delta and
4 shut the oil and gas industry out of the sanctuary.
5 That would mean there could not be unlimited oil and
6 gas development in the Mackenzie Delta. Yet the dilemma
7 for the government ultimately will be, that once you
8 build your pipelines there is a tendency to extract all
9 the oil and gas that you can find. Once you build the
10 pipeline you want to fill it up.

11 So, we are looking at the long
12 term impact and in assessing that impact we have to
13 look at the proposals to build gas plants and gathering
14 lines in the delta, and we have to look at what may
15 occur in terms of offshore drilling. But these proposals
16 that are being made now to the government are proposals
17 that the government has under consideration and about
18 which the government will make up its own mind. My job
19 is to tell the government in due course, what the long
20 term impact will be if a gas pipeline is built, if as
21 the government assumes, an oil pipeline were to follow.

22 There is no free lunch. When
23 you dine on oil and gas, you dine at the expense of the
24 environment. That is what the native people have been
25 attempting to tell us. That is what these environmental
26 witnesses from the Department of the Environment have
27 been telling us.

28 Now my job is to make sure we
29 know in advance^{all of us} what it is going to cost, then the
30 government can make an intelligent choice from the menu.

Yates & Elkin
Cross-Exam by Evans

1 But that is the impact in the long term that we are
2 concerned about and I am willing to allow the matter of
3 offshore drilling to be gone into for that purpose, but
4 I don't want anybody to think that we are here sitting
5 in judgement on the proposal to develop these two ex-
6 ploration wells this summer. We are looking ahead to
7 what would occur if a pipeline were built to the prolif-
8 eration of oil and gas development in the delta and
9 the Beaufort Sea. So, you might bear that in mind when
10 you're questioning Mr. Yates and other witnesses.
11 We're not here to conduct an inquest into the decision
12 the Cabinet made in 1973, to grant approval in principle.
13 We want to make sure that before they decide about the
14 pipeline the Cabinet understands the consequences over
15 the long term. So go ahead.

16 MR. EVANS: Thank you Mr.
17 Commissioner, I'll bear that in mind.

18 I think that our object in
19 following this line of questioning is to try and bring
20 out the decision making process and to isolate to what
21 degree consultation is involved with the people in
22 the area.

23 THE COMMISSIONER:
24 I know that has come up before and I'm the only one
25 who seems to object to it; where does that get me ?

26 MR. EVANS: Dr. Pimlott informs
27 me that you have to make recommendations on approaches,
28 and that this is relevant to that question.

29 THE COMMISSIONER: Well,
30 maybe Mr. Bayly, you raised this with me last week or

Yates & Elkin
Cross-Exam by Evans

1 the week before, about the whole consultative process
2 and I think you persuaded me for reasons that I've now
3 forgotten that we should pursue it, but maybe you could
4 tell me again.

5 MR. BAYLY: I don't have
6 that volume of the transcript Mr. Commissioner, but
7 I'll try and outline the way in which I attempted to
8 distinguish for you the differences between sifting the
9 ashes of the government's past sins or saintly acts,
10 and looking at the process that is used for the purpose
11 of making recommendations that will assist the govern-
12 ment in planning future hydrocarbon development, so
13 that it isn't uncontrolled, if we take a word from Mr.
14 Yates on evidence.

15 This panel is looking in its
16 evidence in chief in any event, at the onshore possib-
17 ilities of a range of ways of looking at development.
18 Either they don't control it at all, in which case they
19 say that's the maximum impact potential situation, or
20 they don't build the pipeline or do any hydrocarbon
21 development which means that you're in a minimum or no
22 impact for hydrocarbon development situation, and in
23 examining what is going on offshore, and that is where
24 I have been leading you in the evidence that I have
25 brought before the Inquiry here in Inuvik. I have been
26 trying to show that the pipeline is a first step, but
27 as you say pipelines are hungry, they have to be filled
28 and that there will be tremendous pressure, as one of
29 the impacts of building a pipeline to look for and
30 develop far more hydrocarbons and we've been told by

Yates & Elkin
Cross-Exam by Evans

1 the industry that the major potential in the Beaufort
2 Mackenzie Basin is offshore, not onshore anymore, and
3 therefore I submit to you that it is revelent to your
4 Inquiry and looking at the long term impact, to look not
5 only offshore at what is happening but perhaps at how
6 it's being decided that it should happen. I'm not
7 interested in the past processes but if there are pro-
8 cesses now that are going on and you are to make re-
9 commendations to the government to say either they should
10 continue to go on the way you're doing them or you're
11 going to get so much coming at you that you're going to
12 have to set up a system. You've got to set up a set of
13 regulations, or you've got to set up a procedure of
14 assessing these developments or you've got to stage them
15 out over a period of time so that they can be coped
16 with both by the people and the environment. You can't
17 know that, I submit to you, unless you have some idea
18 from witnesses like these of the processes that are
19 being used to assess them. Now that doesn't mean sitting
20 in judgement on what the government is doing. I submit
21 to you sir, that the government is looking to you for
22 some recommendations on how this should be done. If you
23 accept that, one of the major long term impacts of the
24 building of a pipeline is increased and intensified
25 hydrocarbon, exploration and development offshore.

26 THE COMMISSIONER: Well
27 all right, carry on but I'm not saying that I subscribe
28 to all that reasoning but maybe it's better to push
29 on and--

30 MR. MARSHALL: Lest someone
think that you are sir,

Yates & Elkin
Cross-Exam by Evans

1 standing alone on the issue, I've been wondering what
2 we're doing offshore, let alone getting into these other
3 areas. I appreciate I've been away a couple of days but
4 coming back, in a way it was as if I hadn't been away.
5 It was sort of like I hadn't been away at all; then on
6 the other hand it was like I'd never been here at all,
7 because the subjects we seem to be getting into seem to
8 be quite a ways from the Order-In Council, and the
9 requirement to look into terms and conditions that
10 should be imposed in respect of any right of way that
11 might be granted across Crown lands for the purpose of
12 the pipeline. That's really all I have to say on that
13 sir.

14 THE COMMISSIONER: Well,
15 that's a sound enough point and the framework established
16 by the Order-In-Council and the pipeline guidelines is
17 one that concerns me because-- But you see Mr. Marshall,
18 when you tell us you want to build a gas pipeline across
19 the mouth of the delta, across Shallow Bay, when the
20 pipeline guidelines assume an oil pipeline will follow.
21 I know you're not going to build it, but guidelines say
22 that both Foothills, both Arctic Gas and Foothills have
23 to supply evidence regarding the impact of an oil
24 pipeline along the same route, along the same corridor
25 then it seems to me we would be remiss in examining
26 that impact if we didn't examine the overall picture.
27 If the whales are going to be affected by that oil and
28 gas pipeline, by that development of that corridor then
29 what is the point of attaching the most stringent terms
30 and conditions in the world, if ultimately, as Dr.

Yates & Elkin
Cross-Exam by Evans

1 Sergeant has said, the proliferation of oil and gas
2 development throughout the delta would result in the
3 extinction of the herd. The government is entitled to
4 have from this Inquiry, not only terms and conditions
5 but to know whether those terms and conditions, in the
6 long run are going to be meaningful and it may be that
7 you, as the proponent of the gas pipeline, say "Well what's
8 this got to do with me." Maybe it has nothing to do with
9 you, but it has a lot to do with the business of the
10 Inquiry and providing the government with a report that
11 will enable them to make an intelligent decision, and if
12 we didn't do that it seems to me we might as well pack
13 up and go home. All right.

14 MR.HOLLINGWORTH: Sir, I
15 read your rulings and I reread the Order-In-Council and
16 the pipeline guidelines coming up here on the plane the
17 other day, and I was reluctantly drawn to the conclusion
18 that you could indeed examine the possible effects of
19 both gas and oil exploration in this area, but today I
20 think you're being drawn a step further. I really can't
21 see how an examination into the government's current
22 decision making process on when or where somebody should
23 drill, is within your terms of reference.

24 THE COMMISSIONER: Well, you're
25 with me then, because I'm--

26 MR HOLLINGWORTH: Yes sir, I think it's
27 a further step, and I really think there's quite a great gulf
28 between what we've been looking at so far and this new
29 step.

30 THE COMMISSIONER: That's my

Yates & Elkin
Cross-Exam by Evans

1 concern because we-- I want to look at these matters of
2 substance. Seeking to predict impact is a very difficult
3 thing to do, and I don't want to be diverted into an
4 examination of what processes the government has pursued
5 in the past; but it may be that I should do what I have
6 done all along in this Inquiry and that is follow the
7 line of least resistance. Let the Christians be asked, the
8 answers emerge, and it usually takes less time than to try
9 to sort it out the way I'm doing now.

10 So carry on Mr. Evans, but I'm
11 not with you, I'm just --let's see if this-- let's see
12 if we get anything out of this and if we don't pretty
13 soon, I think I'll have to stop you.

14 MR. EVANS: Thank you, Mr.
15 Commissioner.

16 Q Mr. Yates, I don't know
17 whether you recall the question I asked you about 20
18 minutes ago before we got into this discussion, but I
19 was wanting you to describe the various stages involved
20 in the approval of a major project and not necessarily
21 the offshore drilling, but that's obviously the one that's
22 in everyone's mind.

23 A Well, I think I'd better
24 deal with that specific one because the other processes
25 are subject to different procedures and I think that it
26 would merely be confusing if I were to give you a general
27 description of how the government deals with applications
28 for different things.

29 As you know we've got the oil
30 and gas plant assessments, the gas plant and gas gathering

~~Yates~~ & Elkin
Cross-Exam by Evans

1 system assessment system which we have described briefly
2 today. We have land use permits. We have enumerable
3 processes, so if I may I'll just go down to define as
4 clearly as I am able what the approval in principle that
5 was granted to Dome meant.

6 The authority was granted to
7 Dome Petroleum Company to drill the two exploratory wells
8 in the Beaufort Sea offshore, subject only to terms and
9 conditions that would be attached prior to the issue of
10 the drilling authorization; terms and conditions which
11 would be developed by the appropriate government authorit-
12 ies, subsequent to the completion of the Beaufort Sea
13 Project. Now perhaps I could-- the most appropriate
14 quotation I can produce on that, comes from the Toronto
15 Globe and Mail on August the 14th, 1973 which was shortly
16 following Cabinet's approval of the approval in principle
17 and just quoting in short: "Government sources, yesterday
18 confirmed that the impact study plans follow a recent
19 Cabinet decision to allow oil and gas drilling in the
20 Beaufort Sea, on the proviso that both the government and
21 companies involved in such drilling perform the necessary
22 preliminary basic research in the environmental impact
23 studies". That is as precise I think interpretation of the
24 Cabinet decision that I could give.

25 Q O.K. The point I'm trying
26 to make is would the drilling authority be essentially
27 automatic after the approval in principle or is it
28 possible that they would not receive the drilling auth-
29 ority ? In other words is it de facto authorization to
30 drill when they get approval in principle ?

Yates & Elkin
Cross-Exam by Evans

1 A Before the company can
2 drill in the Beaufort Sea it has to have in its possession
3 a drilling authorization signed by the Minister of Indian
4 Affairs and Northern Development. Now I think it's clear
5 that the Minister can simply not sign such an authorization,
6 regardless of previous decisions that may or may not have
7 been made. What happens then I don't know. There's
8 presumably some liability incurred.

9 THE COMMISSIONER: If he
10 doesn't sign it.

11 A If he doesn't sign it.

12 THE COMMISSIONER: You're not
13 speaking for the government when you say that, I take it.

14 A No.

15 MR. EVANS:

16 Q Now Mr. Yates I wonder if
17 I could refer you to the Department of Indian and Northern
18 Affairs policy statement for Northern Development 1971-
19 1981. I imagine you're very familiar with that statement.

20 THE COMMISSIONER: That's in
21 Mr. Yates article, isn't it.

22 MR. EVANS: Yes. It's referred to
23 in the article. That's correct. Page 11.

24 Q I wondered how these related
25 to the planning objectives that you outlined in your evidence today.

26
27 A Well, as with every activity
28 when compared with the seven objectives of the government,
29 they will conform more or less with those seven objectives.
30 I have difficulty in considering any single activity that

Yates & Elkin
Cross-Exam by Evans
Cross-Exam by Bayly

1 is not conflicting with one or other of them. So if you
2 wanted me to sort of cite the extent to which the gas
3 pipeline or the gas plants or the Beaufort Sea drilling
4 comply precisely with these objectives I would have
5 difficulty in quantifying the contribution they make on
6 the one hand to the higher standard of living, to the
7 second part, the maintenance and enhancement of the en-
8 vironment and the third, the viable economic development.
9 I would just have to say that in some way they contribute
10 to each of those three elements, either by the purpose
11 which they are set out to achieve or by the manner in
12 which they're being conducted.

13 MR. EVANS: I don't think I
14 have any further questions for this panel Mr. Commissioner,
15 thank you.

16 THE COMMISSIONER: Thank you
17 Mr. Evans.

18 CROSS-EXAMINATION BY MR. BAYLY:

19 Q Mr. Yates, while we're on
20 the subject of review processes, let me go over with you
21 some of the review processes that take place in the various
22 developments that are related to this pipeline, that are
23 part of hydrocarbon development process.

24 First of all there is the process
25 that reviews the gas plants. Part of that is the Mackenzie
26 Delta assessment ^{group} that you referred to in your evidence. Is
27 that correct sir?

28 WITNESS YATES: That's correct

29 Q And these plants are also to
30 be assessed by the Department of the Environment through

Yalen & Elkin
Cross-Exam by Bayly

1 the EARP process and you've said that in your evidence,
2 is that correct ?

3 A That's correct.

4 Q Now, at the same time some
5 of the activities we have been informed by Mr. Horsfield
6 and others in the industry, are governed by the land use
7 permit system, a system of the Federal Government.

8 A Land Use Regulations, yes.

9 Q Yes, in other words the
10 regulations govern them and a permit is issued for each
11 individual activity, whether it's a gravel mining operat-
12 ion or a quarrying operation or an operation to run a
13 seismic line.

14 A Yes, you picked one, of
15 course which is subject to more than one authorization;
16 a gravel permit for example.

17 Q Yes, I understand that.
18 Right and the first process, the one to examine the gas
19 plants, the EARP process is a public process. Am I correct
20 on that ?

21 A I'm not totally acquainted
22 with the manner in which it's carried out. It has provision
23 for public participation but I believe that a public
24 hearing is not a requirement of the EARP process.

25 Q Yes. In any event its re-
26 port is made public.

27 A That's correct.

28 Q Now, with regard to the
29 Land Use Advisory Committee I understand that its' decisions
30 are made in committee as opposed to in a public forum, and

Yates & Elkin
Cross-Exam by Bayly

1 that the reasons for its decisions are generally not made
2 public until the decision itself is made public in the
3 permit.

4 A Yes, that's generally
5 correct.

6 Q Now, we also have the Arctic
7 Waters, Oil and Gas Advisory Committee which is looking
8 at some of the aspects of drilling, looking at the enviro-
9 nmental concerns and as I understand there is no require-
10 ment that they hold any public consultation, though in
11 the example that you have had questions on from Mr. Evans,
12 they have done so.

13 A There is no requirement in
14 law that they should have-- in fact they don't exist in
15 law. They're a committee of government officials but we
16 have made it a policy that there should be consultation.

17 Q Now you said that they'd
18 been going for some two years I believe. Have they had
19 public meetings before this, in their two year history?

20 A They have had meetings in
21 communities I believe; public meetings in the sense that--
22 formal public meetings, not to my knowledge.

23 Q Their review process takes
24 place in committee as I understand and since they're not
25 really an entity in law there's no requirement in any
26 event that their decision be made available to the public.

27 A No, that's correct.

28 THE COMMISSIONER: They report
29 to the minister is what you mean, isn't it

30 A They report to the minister

~~Valus A. Elkin~~
CROSS-Exam by Bayly

1 who then issues whatever permit is required, or does not
2 issue it as the case may be.

3 MR. BAYLY:

4 Q And there is also the Water
5 Board, and the Water Board holds hearings and may hold hear-
6 ings if the plans of the company in particular require
7 water use and these -- this board may hold public hearings.

8 A It's established by statute
9 and in certain cases it must hold public hearings, in other
10 cases the public hearing is optional.

11 Q And the pipeline proposals
12 themselves have been referred by order in counsel to this
13 Commission for the holding of public hearings and the
14 presentation of publicized recommendations.

15 A Yes.

16 Q Now, I invite you to agree
17 with me that there are a large number of ways in which
18 the process of making decisions is to be carried out with
19 regard to the overall development in the Mackenzie Delta.
20 Do you agree with me there ?

21 A Yes, I quite agree with you,
22 and of course one shouldn't overlook the functions of the
23 Territorial Council in that regard. They have a prime res-
24 ponsibility.

25 Q Now it appears to be from
26 your regional planning philosophy , one of the objects
27 of both the Federal and Territorial Government, to make
28 public participation meaningful in the planning process.

29 A That's correct.

30 Q Now, I'm going to suggest to

Yates & Elkin
Cross-Exam by Bayly

1 you that the way in which things are being done now, in
2 a number of different forums some public, some not public,
3 may make it difficult for certain elements of the public
4 to participate in the decisions that are being made sur-
5 rounding the development of hydrocarbon resources in the
6 delta. Would you agree with me there ?

7 A The processes are certainly
8 difficult to follow, even for me to remember the various
9 forum or fori in which we have to participate. I have to
10 agree, it is a difficult function.

11 Q And I invite you to agree
12 with me that it may take an expert in your field to figure
13 out where and how something should be done so that a
14 decision can properly be made.

15 A I think one of the basic
16 problems is the level, the magnitude rather, of the part-
17 icular aspect of development that is being considered.
18 If it were something small like the example, the issue
19 of a gravel permit it may be very important to a few
20 people in a community, but on the other hand it is obvious-
21 ly of not such magnitude that it needs to be considered
22 on a territories wide basis. So we are dealing with a
23 variation of level of development. Now I think I might
24 suggest that the issue of the gravel permit is something
25 that could be done simply by discussion with the Municipal
26 Council or the Community Council, without any formal pro-
27 cess whatsoever.

28 Q Let's take your example,
29 because it's one that we've spent quite a lot of time with
30 in this Inquiry. Now we know that there are gravel -- sorry

Yates & Elkin
Cross-Exam by Bayly

1 rock quarrying requests in the Campbell Lakes area, and
2 normally this is of interest only, as you say, to the
3 people in the surrounding area, perhaps in Inuvik. But we
4 have found that the I.B.P. Committee is fascinated with
5 the possibilities that this may take place. We have found
6 that Dr. Gunn, a consultant with Arctic Gas who is concerned
7 with peregrine falcons and people who are concerned with this
8 species around the whole of North America, are concerned
9 with this particular area from which rock may be quarried,
10 and would you agree with me that it may be that, even in
11 the example that you have cited, what you say may be of
12 only local interest, has far reaching consequences and
13 interests to a wider community.

14 A It may indeed have, and of
15 course that raises the question that's been before this
16 Inquiry before now, and that's the question of overall
17 land use planning; having an inventory as to what exists
18 in the first place and then being able to treat with it in
19 some responsible manner. All I can say is that we are some
20 way from achieving the ideal in that regard. We're just
21 starting. It's going to be a difficult road to follow.

22 Q And a single seismic line
23 may be of interest to the people of Aklavik, but 1000
24 seismic lines in the Mackenzie Delta may be of great
25 interest to that part of the scientific community and that
26 part of the trapping community that is interested in the
27 effects that it might have, say on the muskrats.

28 A Certainly.

29 Q So, there are larger elements even to the decisions that have to be made at present
30

Yates & Ekin
Cross-Exam by Bayly

1 on a project to project basis.

2 A Yes. That's quite correct.

3 Q Now, have you been consider-
4 ing whether a development of this kind in the ideal situation
5 should be controlled through a regional planning organizat-
6 ion that is responsive both to government industry and the
7 members of the local community.

8 A I'm hopeful that the reg-
9 ional planning agency would have the capacity to deal with
10 those kinds of things. When you think of the magnitude, for
11 example you mention ed the I.B.P. sites , it's quite con-
12 ceivable that there would be nobody on that Regional Plan-
13 ning Committee, that would know about the I.B.P. sites .
14 You might require an outside expert who would have that
15 knowledge, or someone who is not resident even in the delta.
16 So I don't think the Regional Planning Committee is the
17 be all and end all of this process. I hope it can be a
18 very useful element in it, and if indeed it were able to
19 take all that load on its shoulders it would be invaluable.

20 Q Would it be fair to say that
21 the hydrocarbon development in the Mackenzie Delta and
22 Beaufort Sea really took government by surprise, in the
23 sense that they had not perhaps the tools, I think is the
24 word you use in your evidence, in the forms of processes
25 to adequately assess them.

26 A I'm not sure that I would
27 agree necessarily, took them by surprise. There has been a
28 very radical change in the level of concern over the last
29 ten years, with respect to different matters such as environ-
30 mental issues, such as even social issues.

1 Q Perhaps we could use the
2 term found the government unprepared to deal them in
3 the massive way --

4 A To deal with this situation
5 as it evolves, that's true.

6 Q And would it be fair to
7 say that you're using the machinery that's available and
8 adapting it as well as it can be adapted to the situation.

9 A I would hope that we're
10 perhaps not quite just reacting, but also perhaps trying
11 to get a little bit ahead of the process. But basically
12 no, I accept that thesis that we're trying to deal with
13 the situation as it appears to us at this time. But hope-
14 fully, being able to look a little bit into the future and
15 the process and getting ahead of a simple reactive res-
16 ponse.

17 Q Well, let's go back to the
18 confusion to people that it may cause in having so many
19 boards, committees, et cetera, either making these decis-
20 ions or asking them to respond to proposals. Would you
21 see it as making it possible for people in the delta to
22 participate more meaningfully if there were a process that
23 they could understand; perhaps a standardized process for
24 them to bring their concerns on things, whether they be
25 gravel pits or artificial islands or seismic lines.

26 A Well, certainly I'm concerned
27 about that element and any advice that can be offered
28 to us, along those lines, we'd be very glad to receive.
29 I think Mr. Elkin, I don't know whether he wishes to com-
30 ment on that aspect since he is closer to the public

Yates & Elkin
Cross-Exam by Bayly

1 participation process, than myself.

2 WITNESS ELKIN: Yes, what Mr.

3 Yates has been saying I very strongly believe is true. As
4 I believe you're aware, the work that we've done with the
5 Regional Planning Committee up to this point has been
6 complicated by various facts. The one fact, although we
7 took careful pains to ensure that any material that went
8 out to the communities and any presentation that was made
9 to them was as clear and as straightforward as we could
10 have it at that time. Despite that, we have found particul-
11 arily since the last Regional Planning Committee meeting
12 that we had, that there is a great confusion in many of
13 the communities as to really what we're trying to achieve.
14 So there's one complication, is confusion with the whole
15 ideal of regional planning and what it really means.
16 Another major confusion, of course, has to do with land
17 claims. The -- there is a common feeling that, not only
18 should there not be development before land claims, but
19 there should be no planning before land claims.

20 Now we feel that there are prog-
21 rams and services that are now being carried out, and
22 whether we support a pipeline or not, the fact that it
23 may happen gives us no alternative at this time, but in
24 fact to do some planning. So if in fact a pipeline does
25 go ahead the steps have been taken, so that some of the
26 bad effects can be handled at that time. But having said
27 that there still is a strong body of feeling in several
28 communities that they do not want to take part in planning,
29 because planning in some way may interfere-- the manner
30 in which the land claims are settled at some point.

Cross-Exam by Bayly

8 Right or wrong, many people be-
9 lieve that the Inquiry is much more than it is. In fact
0 it's a planning body and they are, that the Inquiry is
1 going to develop specific plans to handle matters if and
2 when a pipeline is built. So therefore it's a very dif-
3 ficult time to get across the idea to the people that the
4 regional planning is worthwhile, that it's very important,
5 that they have input so that that planning in effect
6 as much as possible, reflects their concerns and what they
7 want at this time.

28 WITNESS YATES: There was a
29 proposal in that regard I believe. I'm not very close to
30 it as you can appreciate, but I don't think it has taken

Yates & Elkin
Cross-Exam by Bayly

1 shape as yet.

2 Q Right. I understand they've
3 met several times. You're not acquainted with that ?

4 A I'm not-- I'm afraid I'm
5 not acquainted with the--

6 Q You Mr. Elkin ? Yes, how
7 about Mr. Elkin.

8 WITNESS ELKIN: I'm not.

9 Q And you didn't study this
10 when you set about to create a tool for regional planning,
11 I take it ?

12 A No, we did not.

13 Q My understanding was that
14 this was an idea that was generated by the communities in
15 this area and they'd asked for financial support, so that
16 they could co-ordinate their discussion of land use permits
17 and financial assistance did not come forth and this was
18 the reason it didn't get off the ground, but--

19 WITNESS YATES: That's my
20 understanding too'.

21 Q Right. So what you did was
22 you went ahead with a Regional Planning Committee set-up
23 that you've outlined in your evidence, but you did it
24 without looking at the initiative that had been taken by the
25 local communities with regard to land use planning. Would
26 that be a fair statement ?

27 A I wouldn't like to put it
28 quite that way without taking a look at- I take it it was
29 looked at and rejected which Mr. Elkin could perhaps--

30 Q Well Mr. Elkin said he

Yates & Elkin
Cross-Exam by Bayly

1 hadn't looked at it . That's why I--

2 WITNESS ELKIN: Yes-- no we
3 hadn't looked at it though, if in fact that was the strong
4 wishes of the people then I would expect that through
5 the Regional Planning Committee , the local one that re-
6 presents the views of the people and the interest groups in
7 the area that in fact they would raise that. As I think
8 we've indicated before, any of the local input is not win-
9 dow dressing in any way. We very much want a full and
10 active participation from the local groups in the plan-
11 ning and if they had recommendations for us in that par-
12 ticular area we'd be pleased to follow up on that. But it
13 hasn't been raised up to this point by that group.

14 Q So you'd be happy to in-
15 corporate that, if that was raised locally.

16 A We would be happy to look
17 at it in any way, if it could be incorporated, yes.

18 Q As I understand it's the
19 hunters and trappers associations that are involved in the
20 individual communities that look into the land use permit
21 applications. Now I gather from your evidence and from
22 what I've been informed about your planning committees,
23 that they do not include the hunters and trappers associat-
24 ions as people that are represented except perhaps coincid-
25 entally on your body.

26 A I think I should answer
27 that by just giving a little background to that whole area.

28 Q Could we find out if that's
29 true first because otherwise I'll lose--

30 A No, it's not true. It's

Vates & Elkin
CROSS-Exam by Bayly

1 make changes to meet their needs, and as you know through
2 some of the meetings we had, the president of COPE was
3 at it, the Indian Brotherhood was at it, the N.W.T. and
4 Metis Association was at it and as a result of the last
5 meeting there is a common feeling that maybe one of the
6 ways we should go, we should even broaden the Committee
7 further and have two people chosen from each of the comm-
8 unities. If this in fact results in better local particip-
9 ation, in full involvement from all groups, whether they
10 be the native organizations, the average Joe on the street,
11 or the Trappers Association we have, are, and always will
12 be, willing to make those changes.

13 Q Who are "we", Mr. Elkin?
14 You've referred to "we" all the way through and "we" doesn't
15 seem to include the hunters and trappers, the native
16 organizations, the community Councils. Who are "we"?

17 A Well, as you know there was
18 a Federal-Territorial Regional Planning Committee estab-
19 lished to come up with the plan, and when I say "we" I mean
20 that "we."

21 Q All right. So it was that
22 " we " that made the initial decisions and it isn't
23 until the last meeting you had that a wider "we" discussed
24 the fact that perhaps the communities should be represented
25 in a different fashion.

26 A No, it was discussed at the
27 very first meeting and that is when COPE and the Indian
28 Brotherhood were at it. There have been several changes
29 since that time.

30 Q Now, were they invited to

Vaten & Elkin
Cross-Exam by Bayly

1 it, or did they come and--

2 A No, they were-- you know
3 the background. Would you like me to go over the background
4 too--

5 Q It's because we're in an
6 Inquiry that where not everybody knows these things, that
7 they have to be brought out this way.

8 A O.K.

9 MR. MARSHALL: I gather they
10 couldn't do it over lunch. This is something that is of
11 considerable moment to ^{the} work of the Inquiry, is it sir
12 that-- to go through item by item.

13 MR. BAYLY: Mr. Commissioner,
14 Mr. Marshall can make a point that what I'm asking is not
15 relevent to the Inquiry if he wants to, but if he just
16 doesn't want to be here, I would suggest that he could go
17 for lunch, while I follow this line of questioning .

18 MR. MARSHALL: The restaurant's not
19 open yet.

20 THE COMMISSIONER: Well I--
21 what time is it ?

22 MR. BAYLY: It's almost lunch
23 time sir.

24 THE COMMISSIONER: Well, let's
25 adjourn for lunch. Is it 12:00 o'clock, what is it ?

26 MR. GOUDGE: It's 12:25.

27 THE COMMISSIONER: Oh well,
28 let's adjourn for lunch then, and you might consider the
29 extent to which you feel that you ought to bring this out.
30 Consider that over lunch and I think we're getting along

Yates & Elkin
Cross-Exam by Bayly

1 here though and you two gentlemen want to go home on
2 the plane tonight I suppose, and I'd like to accommodate
3 Mr. Yates and Mr. Elkin if we could.

4 MR. GOUDGE: Two o'clock sir ?

5 THE COMMISSIONER: Two o'clock.

6 (PROCEEDINGS ADJOURNED AT 12:25 P.M.)
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

1 Yates, Elkin
2 Cross-Exam by Bayly

3 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

4 MR. GOUDGE: Sir, before Mr.
5 Bayly recommenses, Mr. Yates referred this morning to,
6 in his evidence in chief to information which has been
7 provided to Commission Counsel staff by the Department
8 relating to the gatheringline and gas plant work that
9 is being ^{done} in the Department and I can advise that the
10 information that we have, which is available, of course,
11 for any of the participants to examine is fourfold.

12 First, the socio-economic short-
13 fall statement relayed by the Department to Shell,
14 Imperial and Gulf Oil companies.

15 Second, the response to informa-
16 tion request for socio-economic supplementary concerns
17 submitted to D.I.N.A. by the proponents.

18 Third, a set of assumptions,
19 a gas plant proposal with letter of transmittal from
20 D.I.N.A. to the proponents.

21 Fourthly, environmental guidelines
22 with letters of transmittal from D.I.N.A. to proponents.
23 Those documents are all available for inspection, here
24 in Inuvik if any of the participants wish. I'm sorry, sir.

25 MR. BAYLY: I'm wondering, while
26 we're on the subject of reports, either Mr. Yates or Mr.
27 Elkin, you referred at page fourteen to this list of
28 materials already prepared. Are they the list that Mr.
29 Goudge has read out, or do they include things that are
30 not available for inspection here in Inuvik?

WITNESS YATES: I didn't quite

1 catch your question, I'm afraid.

2 Q Are these the ones that
3 Mr. Goudge referred to or are there others that are not
4 available for inspection in Inuvik?

5 MR. GOUDGE: Which reports are
6 you referring to?

7 MR. BAYLY: Page fourteen of the
8 evidence, first paragraph, last four lines.

9 MR. GOUDGE: Yes, that's what
10 I'm referring to. The material's already prepared in
11 connection with the reviews which have been provided to
12 the Inquiry for information. Those are the materials
13 that I referred to.

14 MR. BAYLY: So Mr. Goudge has
15 answered the question, and there are no others?

16 A No, not yet.

17 Q Now, when we left off before
18 lunch, we left a bit in the air the different processes
19 and the fact that some are public and some are not public,
20 and I believe at that point you agreed that there might
21 be difficulty for people to respond to the different processes
22 and certainly to have access to those that are not public.

23 Do you see an opportunity here for the government to
24 standardize procedure so that the public knows what to do
25 when it wants to express concern, either a person as an
26 individual, a group, a Territorial Government, or whoever
27 it may be? Mr. Yates, you may wish to respond to that.

28 A Frankly, I don't see a
29 possibility of standardizing all these procedures. I
30 would like to see such a way, but I think it's just too

Yates, Elkin
Cross-Exam by Bayly

1 complex an operation to lend itself to that kind of
2 decision. What I would hope, though, is that the differ-
3 ent formulae that are adopted are widely known so that
4 people can become more familiar with them. In recent
5 years, we've had to establish almost every other day some
6 format for dealing with an issue, and it takes people
7 some time to catch up with that.

8 Q We've been informed at
9 this Inquiry by Dr. Banfield for Canadian Arctic Gas
10 that the environmental review process for projects is
11 handled, at least in part, by the National Environmental
12 Policy Act of the United States and it provides in one
13 of its sections for an environmental impact assessment
14 of any large project, prior to approval. That has been
15 put into statute. Do you see a possibility of that kind
16 of a process for bringing together, what I think you agree
17 is, at least a diverse way of deciding the segments of a
18 development and how they should proceed?

19 A There may be some way. I
20 don't see it as clearly as that, personally, no.

21 Q Have you studied that?

22 A Studied in the sense that
23 I looked at it constantly from day to day. Yes. Studied
24 in the sense of having an individual separated from the
25 day to day operations to produce a definitive study, no.

26 Q So you've looked at the
27 American procedure, but you haven't studied it to see
28 whether something like that should be done for assessing
29 major developments either in the Canadian north or else-
30 where in Canada?

Yates, Elkin
Cross-Exam by Bayly

1 A Well, I think the point
2 I should make there, it's not within my responsibility
3 to examine the national environmental assessment procedure.
4 That's within responsibilities of the Department of the
5 Environment.

6 Q Let's bring it down to the
7 north, because I think you'll agree with me that you
8 have a responsibility there for planning.

9 A That is correct.

10 Q It might well be possible
11 to have a Northern Environmental Policy Act to deal with
12 matters in the Territories. I gather then, that you
13 haven't look at it from that point of view either?

14 A No. Not in the sense of
15 having a specific legislation relating to that process.

16 Q One of the puzzling things
17 to people is why some things are held behind closed doors
18 and other things are held in public hearings or in
19 meetings to which the public has access. Do you feel
20 that there may have been historical reasons ^{for this} that may no
21 longer apply and that people are rightly confused?

22 A In some cases, I think the --
23 it's often expediency in dealing with a normal process
24 of government. It's only in recent years that the public
25 has sought a greater exposure to those processes, generally
26 speaking, and it's an endeavor to respond to that that
27 the response perhaps in your view is somewhat uneven.
28 That in some cases administrative processes are continuing
29 within departmental organizations and others are being
30 conducted through a sort of public process. I think I

YALUM, ELLIOTT
Cross-Exam by Bayly

1 would like to make the point that there is very little of
2 a secret nature that is being carried on behind closed
3 doors. Most of the information is available if somebody
4 asks for it.

5 Q But "secret" may be the
6 wrong word, but it is not readily available and it is
7 not often for discussion in public in some areas; that is,
8 with the officials as a group. If we look at the Land
9 Use Advisory Committee, for example, the public doesn't
10 walk into their meetings and sit down and listen.

11 A That's correct. Is there
12 some rationale for that or is this just something that
13 has happened and been continued?

14 Q No. There's a, I think a
15 reasonable rationale for it. There's provision for the
16 public input through the consultation, through the
17 sending of the application for a land use permit to
18 a community that might be affected by it. There's
19 provision for that in the procedure and there's a pro-
20 vision for -- if the community feels that there is some-
21 thing wrong with the application or they have considerable
22 concern about it, for them to meet with, not necessarily
23 the whole committee, but at least with public officials.
24 Then provision for that input to be incorporated into
25 the terms and conditions of the land use permit. There
26 is not provision for, if you like, a public hearing
27 process for each land use permit because I think partly
28 on account of cost of this process and the numbers of
29 permits that require to be processed and partly due to
30 the availability of the very limited human resources that

Yates, Elkin
Cross-Exam by Bayly

1 we have. I don't just mean within government departments,
2 but also mean in the public sector in the Northwest
3 Territories.

4 Q Would you agree with me
5 then, that in your regional planning there may still be
6 areas where the public, for the various reasons you've
7 outlined, is not invited to participate in the decision
8 making in the area in which they live and work?

9 A In connection now, specific-
10 ally with the Regional Planning Committee, it's precisely
11 the thought that that forum would bring elected people,
12 members who've been elected by their communities or ap-
13 pointed by the Municipal Councils or whatever, it would
14 bring them into a forum where these issues would be dis-
15 cussed and that they would have access -- direct access --
16 to the officials concerned with the planning of such
17 functions and could seek further information and perhaps
18 then, bring to the public eye an issue which the depart-
19 ment or the official might consider, well "perhaps that's
20 of no great concern to the public", but through this
21 forum, recognition would be brought to the fact that it
22 is indeed of public concern and therefore, should be
23 exposed to a more public process. I think that the
24 Committee can serve a useful purpose in that context.
25 I don't, on the other hand, think that every single
26 matter that occurs in the region is automatically going
27 to be referred to the Committee, simply because the mass
28 of paper that would be involved would submerge it.

29 Q Now, you've referred in
30 your evidence to "old style" as opposed to "new style"

Yates, Elkin
Cross-Exam by Bayly

1 consultation and without going into the sifting of
2 ashes, would you describe the process of making an
3 agreement in principle with industry to be confirmed or
4 rejected after certain things have been done by both
5 industry and government, old style or new style consulta-
6 tion?

7 A I would call it in-between
8 style, if you want me to put it that way. Neither old-
9 style nor new style.

10 Q I was afraid of that. . . .
11 Perhaps no style at all?
12 You consider that to be sort of an oddity then?

13 A No. I meant inbetween
14 because there was, to some extent, in other words, prior
15 to, shall we say, 1972 back in the sixties, there would
16 not have even been an industry-government seminar in
17 1972, to consider the issue. The government would simply
18 have made its decision, in all probability. So that's
19 why I'm putting it in a transitory phase.

20 Q So, if we were to expect
21 more offshore drilling applications, you would anticipate
22 that they wouldn't be handled in the first instance by
23 agreement in principle but that they might be referred to
24 some -- they might have to go through some of the regional
25 planning process, prior to approval?

26 A First, of all the
27 approval in principle process is now sort of an established
28 one and therefore, applications are being dealt with
29 in the course of that process. I would say that if that
30 issue came up again today, there would probably be a
slightly different approach to the movement towards the

Yates, Elkin
Cross-Exam by Bayly

1 granting of approval in principle with a greater public
2 input to the recommendation relating to approval in
3 principle. When you come to an individual application
4 under that process, I think the Committee would be made
5 aware of the fact, but whether it would require to have
6 a great deal of input or not would depend, I think, almost
7 entirely on what the views of that committee was with
8 respect to a particular application. I wouldn't want to have
9 the impression that automatically, each of these individual
10 applications would be referred to the Committee for
11 detailed consideration.

12 Q Let's take a specific
13 example, would you?

14 THE COMMISSIONER: Now,
15 you mean detailed to -- referred to the Regional
16 Planning Committee?

17 A That's correct.

18 MR. BAYLY: Would you see the --
19 any future agreements in principle having to be preceded
20 by the impact assessment rather than followed by it?

21 A I would think if we had a
22 similar situation arising, yes, in all probability. Given
23 the ^{current} atmosphere, the current climate of concern in these
24 areas, I would have to agree that probably a different
25 process might be adopted today from that which was
26 adopted previously.

27 Q Now, I don't want to pin
28 you down to individual ones because you don't know how
29 or from where the next application is coming, presumably,
30 but you would see in general terms, that it would be

Vatog, Nikin
Cross-Exam by Bayly

1 useful to have environmental and social impact assess-
2 ments done prior to the government and industry committing
3 themselves to an agreement in principle?

4 A In the case of a major
5 issue.

6 Q All right. We had one
7 come up when Mr. Horsfield was on the witness stand and
8 it concerned an application under the Land Use Regulations
9 to build, or to quarry rock from the Campbell Lakes area
10 to build a production island at the Adgo site. The
11 letter that accompanied that suggested that the company
12 had to know whether they were likely to get this permit
13 so that they could go out and purchase several millions
14 of dollars worth of equipment.

15 THE COMMISSIONER: The letter
16 from Adgo -- not from Adgo -- from Imperial to the
17 Land Use Committee, that's the letter you mean?

18 MR. BAYLY: That's the one,
19 yes sir, and that's been tabled as an exhibit before
20 the Inquiry.

21 THE COMMISSIONER: Yes , I
22 remember it, yes.

23 MR. BAYLY:
24 Q Now, that seems to be the
25 same kind of testing in advance that we've seen in the
26 agreements in principle. In other words, the company
27 was asking the government to agree, in principle, to
28 allow them to quarry so that they could go and purchase
29 equipment so that they could, after environmental impact
30 assessments, etc., go in with a specific plan and quarry
for material.

Yates, Elkin
Cross-Exam by Bayly

1 THE COMMISSIONER: Mr. Yates,
2 I don't know whether you saw the letter, but it was an
3 interesting^{letter} illustrating Mr. Bayly's point because the
4 representative of Imperial said in the letter:

5 "We would like you to assure us by April 1, that
6 we will, in fact, get this permit notwithstanding
7 whatever the process^{may} entail after April 1, in terms
8 of various statutory consultations."

9 And the letter went on no doubt quite appropriately from
10 the company's point of view to say,

11 "We have to buy the equipment".

12 And so forth and so on, and the implication was that if
13 they didn't know by April 1, they couldn't buy the
14 equipment and so on and so forth. But that's what the
15 letter said, anyway.

16 A That certainly seems
17 you know, quite an appropriate action for a company to
18 take, particularly in light of the uncertainty of the
19 I.B.P. sites at this time. I would consider -- I don't
20 know how that is being dealt with, so I couldn't
21 really comment further on it.

22 Q I have the exhibit here
23 and I'll just ask you to look at it and perhaps after
24 coffee, I'll go on with another line of questions. You
25 might have a chance to read it and comment on it. With
26 regard to the assessment group and the regional plan
27 that has been proposed for the delta, could you tell me
28 and perhaps, you could Mr. Elkin, where did this --
29 where did the initiative come from to use this process?

30 WITNESS ELKIN: Which process

Yates, Elkin
CROSS-Exam by Dayly

1 are you referring to?

2 Q Let's take them one at
3 a time. First, the assessment process.

4 A As I understand it, the
5 decision to undertake the assessment of the proposal to
6 build the gas plants came from Ottawa when the application
7 by the proponents was made, and I believe the decision
8 at that time was to undertake an assessment of the
9 impact with the aim of coming up with a site, specific
10 terms and conditions that would apply if approval was
11 given for the gas plants and gathering facilities to go
12 ahead.

13 Q Did the -- after the
14 initial proposal was made by Federal Government, did the
15 Territorial Government participate in how this should be
16 set up?

17 A Yes, they did. I wasn't
18 personally involved at that point, but I understand that for
19 study purposes it was divided into really three areas,
20 the technical area, the environmental area and the socio-
21 economic area, and as the Government of the Northwest
22 Territories has major responsibilities in the socio-
23 economic area, we were given the responsibility for
24 carrying out the studies in that area.

25 Q Is that the general history
26 of the regional planning concept, as well. You said at
27 the senior, intermediate and junior groups involved, on
28 page five of your evidence.

29 A No, very shortly after
30 the specific application on the gas plants, the work

Yates, Elkin
Cross-Exam by Bayly

1 began into carry out the assessments in that area. It
2 was quite obvious that in coming up with a proper assess-
3 ment, obviously it was very important not only to look at
4 the gas plants and the other related facilities that would
5 be tied in, but obviously, that what was needed was a
6 comprehensive look at the whole area and look at all major
7 developments that were planned to take place, including,
8 as we all know, the gas pipeline, the gas plants and the
9 gathering system for the oil and gas exploration that
10 would take place; the eventual possible construction
11 of an oil line down the same area, and also, taking into
12 account, at least the other two major developments that
13 were either planned or were taking place. The construction
14 of the two highways -- the Mackenzie and the Dempster
15 highways.

16 Q When did it become obvious
17 that you had to look at this as a whole region? I gather
18 it was after the MDDGAG was set up?

19 A I'm not sure if it was after.
20 It certainly followed very, very closely on the heels of
21 when the decision was made to go ahead with the assessment
22 of the gas plants, because it became very obvious at that
23 point that although in certain areas, you could come up
24 with an assessment of the specific gas plants, there
25 were certainly other areas that any recommendations only
26 made sense if in fact, they were considered in the
27 context of the other major developments occurring in the
28 same area.

29 Q What consultation was there,
30 prior to the first meetings of the Delta Regional Planning

Yates, Elkin
Cross-Exam by Bayly

1 Council which I gather is now the Planning Committee,
2 with the communities of the delta and other groups with-
3 in the region?

4 A All right. Do you mean
5 before the machinery for the regional plan was established?

6 Q Yes, if actually any took
7 place.

8 A There wasn't maybe, any
9 formal consultation as we see it. The consultation con-
10 sisted during a couple of the hearings here, on MDDGAG. It
11 was indicated that a regional planning exercise would be
12 proceeded with very soon and the people from the community
13 and the different organization that attended the MDDGAG
14 meetings that we had at that time, were advised of the
15 basic thrust of what the regional plan was all about
16 and the very important role that we expected the people
17 in the area to play.

18 Q Now, can you tell me about
19 when that was?

20 A I stand to be corrected
21 on the dates, but I believe that the September 18th
22 meeting was likely the first time, but as I said, I'm
23 not totally correct--I may not be correct on the timing,
24 but it was about that time, I would guess.

25 Q Well now, was there con-
26 sultation as to which communities should be involved in
27 this regional plan with the communities themselves, or
28 the people in them?

29 A No. Consultation didn't
30 take place in that area. Here again, similar to what I

Yates, Elkin
Cross-Exam by Bayly

1 outlined when we were going over this area before, we
2 had a difficult time deciding what communities in the
3 area to home in on first, and the reason that the five
4 communities in the delta area was chosen because through
5 the views of the Federal people and the Territorial people
6 on our planning group, it was felt that because of all
7 the major developments that I just outlined, were occurring,
8 or could occur in that area, that it was important that the
9 impact would be the highest and therefore, those five
10 communities would be chosen first. There always was, and
11 always is the understanding is that that region, when it
12 need be, could be expanded to include other communities;
13 if, in fact, it is felt that there'll be major impact on
14 other areas as well. In addition of course, we're all
15 fully aware there's many other areas along the Mackenzie
16 Valley as a whole that will be certainly impacted if
17 gas and oil lines go ahead. At some time in the future
18 and overall planning approach as we've taken here, we
19 intend to carry out in those areas.

20 Q The reason I asked that
21 is, as I understand the Inuvik region as the Territorial
22 Government administers it, includes the area from Fort
23 Franklin north to Sachs Harbor. Do you agree with that?

24 A That's correct.

25 Q If we looked at the region
26 as, say the native organization here, sees it; the
27 COPE region includes the communities surrounding the
28 Beaufort Sea as well as the delta communities.

29 A That's correct.

30 Q So, you didn't see them as

Yates, Elkin
Cross-Exam by Bayly

1 the region for your purposes, you're saying because
2 you were only looking at the area physically where the
3 development was most likely to take place first?

4 A No. It was looked at in
5 terms of the -- and here again, it was at the start --
6 looking at the -- what we thought was the places of the
7 heaviest impact on the people in that area. So, we
8 decided that the five communities that we were planning
9 for at this time were the ones where the impact could
10 be the heaviest at this point, but there was always the
11 understanding that that didn't necessarily, in any way,
12 exclude the other communities, either from taking part
13 in some manner at this point in having their input to
14 the plan and certainly, it was always considered that at the appropriate
15 time, the actual planning performal process would
16 be expanded to include other areas as well.

17 Q All right, but if you're
18 planning for a region, and I take it, it's fairly
19 important to include all those areas that are likely to
20 be affected and you must have made a judgment that at
21 least in the initial stages, you were going to visit
22 those communities that were going to be affected first.
23 That decision, as I understand, was made by the Territorial
24 and Federal Government officials?

25 A That's correct. In all
26 of these areas when I said before, that we wanted and
27 expect full input from the local community, I mean just
28 that. In other words, with regard to the specific
29 points you made, if the community themselves felt it was
30 essential that other communities needed to be added to

Yates, Elkin
Cross-Exam by Bayly

1 this particular group in the study that was going on,
2 we certainly would be prepared to move in towards that
3 area.

4 Q So, would it be fair to
5 say that you haven't got to the stage of deciding just
6 what the extent of the region is that you should be
7 planning for? You know what the core of it is, but you
8 don't know, at this point whether other areas should be
9 included so that you can plan for them altogether?

10 A We're pressing ahead on
11 planning for the core, but we're certainly open at all
12 times as Mr. Yates, I believe, stated during the presenta-
13 tion he gave at the first. We're not producing and don't
14 intend to produce a final blueprint that is going to
15 be used forever. It's something that always changes and
16 if there's reasons to add other communities at whatever
17 point and other areas, we're very happy to add them.

18 Q Is that going to interfere
19 with your Territorial and Federal programs in that you
20 plan in other ways for the Inuvik region territorially
21 than you may be doing for the delta region in your
22 Regional Planning Group?

23 A None whatsoever because
24 the Territorial Government by and large, they plan on a
25 program basis at this point, on a community basis to a
26 certain extent, but the idea of overall coordinated
27 planning for a whole region has not been undertaken, as
28 we're doing now so it doesn't conflict, no.

29 Q Well, what you've just
30 suggested is it doesn't conflict because the Territorial
Government

Yates, Elkin
Cross-Exam by Bayly

1 isn't going to plan that way anyway. Who's going to
2 administer the plans that you decide should be put into
3 effect?

4 A The plans that will be
5 put into effect depending on which groups and government
6 agencies are responsible at that time will be responsible
7 for putting into effect the plans that are approved,
8 whether they be local councils or whether they be
9 specific groups within the communities, whether they be
10 the Government of the Northwest Territories or in some
11 areas in fact -- Ottawa as well.

12 Q Now, when you were doing
13 this work, as I understand from your evidence and the
14 slides that you've -- the slides as they were presented
15 there, now in as figures in your evidence -- you classified
16 the various groups and governments and committees, etc.,
17 and grouped them together and I think that's found on
18 figure two. Now, the curious thing about figure two,
19 is that I understand that it isn't the same as the slide
20 you showed when you visited the communities and I have
21 a copy of the slide here, where it includes as a special
22 interest group, the Territorial Council along with
23 COPE, the Indian Brotherhood and the Metis Association.
24 Do you have a copy of that or would you like to see the
25 one that I have here?

26 A I don't have a copy, but
27 what you say is correct so I don't need to see it. I
28 know it's correct.

29 Q Maybe you could tell us
30 what you mean by a "special interest group" and why

Yates, Elkin
Cross-Exam by Bayly

1 these three were put together in the first place and
2 then changed in the second place?

3 A O.K. Possibly there's a
4 too much emphasis put on this special interest group,
5 and obviously, since you're raising the point, maybe
6 that wasn't a good name to choose. All it was intended
7 to show was to indicate that on the Regional Planning
8 Committee that would coordinate the local input to the
9 plan, who in fact, was on that group and that's the
10 only reason it was called the "special interest group".
11 If that offends anyone, we certainly are very happy
12 to change that.

13 Q I just thought maybe we
14 got a step closer to self-governments. Now, as I
15 understand the MDDGAG group who's terms of reference,
16 as you've stated, included really the gas plants and
17 gathering systems, invited all the communities of the
18 Inuvik zone and the native organizations to participate.
19 Is that correct?

20 A That's correct.

21 Q Then when the regional
22 plan was introduced, it restricted the area to those
23 five communities you've mentioned and the role of the
24 native organizations became that of special interest
25 groups or nonvoting participants. Is that correct?

26 A The area was restricted,
27 you are correct and it was restricted for the reason
28 I indicated before, that at this stage, we wanted to
29 concentrate on the areas of highest impact. It was
30 also restricted because the local consultation process

Yates, Elkin
Cross-Exam by Bayly

1 in the whole regional plan was to go into much more
2 depth than the assessment of the gas plants and therefore,
3 to enable this process to get going on purpose, we
4 thought it was desirable as well to keep that group
5 small.

6 Q Now, in your approach,
7 I gather, you went to the councils of the hamlets and
8 the settlements in the region. Is that correct?

9 A That's correct.

10 Q And the town, in the case
11 of Inuvik?

12 A That's correct.

13 Q You went to them, because
14 they're the elected representatives in those communities,
15 is that right?

16 A That's correct.

17 Q Now, you've been in
18 Northern Administration for a long time and you've been
19 through the process of area administration and regional
20 administration right through to the present process; am
21 I correct in my analysis that the settlement councils
22 and town councils are given responsibilities within their
23 own boundaries only?

24 A That's totally correct.

25 Q Right. Now, what you're
26 doing, as I understand, is you've gone to these communities
27 and, in a sense, you've asked that they expand their
28 sphere of influence, if not their responsibility to
29 discuss the region around their communities. Do you
30 agree with that?

Yates, Elkin
Cross-Exam by Bayly

1 A No, I don't. What we
2 said to them is that we expected the committee, whoever
3 it's comprised of, to represent the interests of all
4 people in groups within the whole region; both those
5 people inside the communities and outside.

6 Q All right. But the --
7 now the councils of the settlements, as I understand it,
8 are set up to do things within the settlements and towns.

9 A That's correct.

10 Q That includes garbage,
11 sewage, water, roads.

12 A That's correct. Normal
13 municipal services.

14 Q But you've asked them to
15 be the group to chose the people that should be on the
16 planning committee for not only the community, but for
17 the region.

18 A No. All we've said to
19 them is that they have to insure in the plan in the
20 local input that they get valid input from all of the
21 interested groups. That doesn't mean they choose who
22 will, in fact, be those groups.

23 Q So, you give them the
24 responsibilty to approach other people in the community,
25 like, for example, hunters and trappers organizations?

26 A That's correct and I
27 should add, we pointed this out before, but I think this
28 is a good time to raise this point is that as a result
29 of the meeting that we had, this as you know, the -- who
30 was on the committee itself, has been a contentious issue

Yates, Elkin
Cross-Exam by Bayly

1 right from the start. We certainly are not hung up on
2 who is the committee. The basic principle that we wanted
3 a full and proper representation from all the main interest
4 groups and people in the region was our principle and
5 still is. At the last meeting, they suggested maybe one
6 of the ways that this could be improved was by having
7 two people chosen from each community, or two people
8 chosen by the people of the community by any
9 manner that they saw fit to choose and because we are
10 very honest in our approach and want proper full consulta-
11 tion and not leave any groups out, we're quite prepared
12 and able to make those changes.

13 Q So you see that you're going
14 to have to reorganize because it didn't appear to work,
15 at least as far some people --

16 A It hasn't worked as well
17 as we wanted and we're not getting the local input and
18 since we are serious about the local input, we're
19 certainly very happy to make whatever changes and
20 improvements to make it work. That's correct.

21 Q So it may be that the
22 thing that you were shying away from earlier, and that
23 is having a group of perhaps twenty five instead of a
24 more workable group of five -- or five plus the government
25 people that are on the committee -- you may have to go
26 to a bigger group.

27 A We may have to go to a
28 little bit bigger group and if that's one of the prices
29 we have to pay to get more proper local input into
30 the plan, we're prepared to take that step.

Yates, Elkin
Cross-Exam by Bayly

1 Q So you've learned in this
2 that the interests in the communities are quite diverse
3 and maybe can't be responded to completely by just
4 having one person from each community?

5 A I think under certain
6 circumstances, the other way could work, but under
7 these circumstances it hasn't worked. It hasn't produced
8 the results that we think are important to the plan
9 and we're prepared to change it to make it produce the
10 results.

11 Q Have you restricted it
12 to two people per community, is that the way it's been
13 done?

14 A No. We haven't restricted
15 it. The various members on the committee including
16 COPE and the members of the council -- of the Territorial
17 Council -- have suggested that might be an ideal way
18 to go from this point, but that isn't firmed up at this
19 time.

20 Q Did you feel that the role
21 of your Regional Planning Committee was to make impact
22 assessments?

23 A The basic role -- now
24 you're talking about for the whole regional plan, is
25 that correct?

26 Q Yes. You've defined the
27 region now. It involves the area surrounded by five
28 communities in the delta and I want to know if you were --
29 if you thought it was your role, or you had defined it
30 as your role to make impact assessments of the pipeline

Yates, Elkin
Cross-Exam by Bayly

1 and related projects for this region?

2 A Yes. We felt it's our
3 role to assess the impact and to come up with the
4 recommendations in the areas of policy planned services
5 and programs, and legislative changes that would be re-
6 quired to maximize any benefits that would come with
7 any of the options that might be chosen, and to minimize
8 any of the bad effects that would come along as well.

9 Q All right. You realized
10 and were aware that the Berger Commission was doing
11 things that were similar?

12 A Yes.

13 Q Did you make attempts to--
14 not to duplicate work that was being done by this
15 Commission?

16 A Yes, we are. In fact, we
17 are relying very heavily on the results of these hearings
18 and we certainly have been and fully intend to continue
19 incorporating the findings of this Inquiry here and any
20 of the special studies that they've had carried out for
21 it.

22 Q Did you have -- Did you
23 assign somebody to monitor the hearings or to read the
24 transcripts for you to see how the concerns of the
25 people were being expressed from day to day in the In-
26 quiry?

27 A We don't have any one --

28 MR. MARSHALL: Excuse me, Mr.
29 Commissioner, it seems to me that this is a line of
30 questioning that may be quite improper to question the

Yates, Elkin
Cross-Exam by Bayly

1 way in which another body conducting an inquiry is carry-
2 ing out its work before this Inquiry. It seems to me
3 as to be a rather awkward situation to say the least.

4 THE COMMISSIONER: Mr. Goudge,
5 do you have any views on the that?

6 MR. GOUDGE: Well sir, I have
7 no strong views one way or the other. It seems to me that
8 we're perhaps on the verge of getting into an area that
9 is of no use to you sir in your task, but if the witness
10 is prepared to answer the question, I have no grave
11 difficulty with that question.

12 MR. BAYLY: That
13 particular question, as far as I'm concerned is of no
14 consequence as far as the affairs of the world are
15 concerned. Now, what information did you give to the
16 communities for them to respond to in the regional plan?
17 We have your presentation, by the way, that you made
18 fairly recently but what I was referring to was what you
19 did before that.

20 A One of the pieces of
21 material is this one that I'm holding in my hand here.
22 It is a detailed outline of the five possible options
23 that the -- our Federal Territorial Regional Planning
24 Committee had prepared. Basically, what it does, it
25 outlines the five options, the one with no oil and gas
26 development going ahead and the other four possible options
27 under which the construction of gas -- a gas line would
28 proceed and then goes through and does a very preliminary
29 outline of the possible impact on the communities of
30 each option in dealing with all areas; whether it be social,

Yates, Elkin
Cross-Exam by Bayly

1 physical, communications, transportation, economic. But
2 it's a very broad document and the purpose in giving it
3 to the communities is really twofold. One to simply
4 outline to them as a starting point, some of the broad
5 options that we thought would be open to them to give
6 them the opportunity to pick and choose elements out of
7 those options that they would like us in the plan to
8 develop our detailed plans on. In other words, what
9 specific options to pursue further in the plan; or in
10 fact, if they so chose, to add any other options that they
11 wanted us to pursue. We were very anxious to carry out
12 the detailed planning with regard to the options they
13 wanted us to carry out and ^{we} simply put this forward as a
14 starting point and not as something that they were told
15 they were to carry out; as a starting point for them to
16 think about the options --

17 THE COMMISSIONER: For discussion

18 A For discussion purposes,
19 that's correct.

20 MR. BAYLY:
21 Now, I've got your five
22 options outlined in the second slide to your evidence.
23 Mr. Commissioner, just before I go into this, I didn't --
24 I don't have any reason to go back to that question that
25 I had abandoned, but, I think sir I'm sticking very
26 closely to the evidence that these gentlemen have chosen
27 to present to this Inquiry and if they've done that, I
28 submit that it is relevant to cross-examine them on it,
29 and if Mr. Marshall chooses to object to the evidence in
30 chief, that's one thing, but as long as I stick to that
evidence pretty closely, I would submit that I'm within

Yates, Elkin
Cross-Exam by Bayly

1 my realm of cross-examination and I've stuck very
2 closely to that, as I see it.

3 THE COMMISSIONER: Well, you may
4 have and as you say, we have no reason to backtrack, but
5 I take the view, and that just because something is in
6 a written statement prepared for the Inquiry, that it
7 doesn't mean that all the subjects covered in that
8 written statement become relevant. That is so with
9 respect to the statement of Mr. Yates and Mr. Elkin,
10 just as it is so with respect to the written statement
11 of Dr. Pimlott's that was filed two weeks ago. There
12 were some matters included in his written statement that
13 went beyond, it seemed to me, what was relevant, but
14 I don't mean that the Inquiry, or Commission Counsel or
15 Mr. Marshall or Mr. Hollingworth, because they didn't
16 object at the time, must be taken to have agreed that
17 everything that Dr. Pimlott said was admissable, so --

18 MR. BAYLY: Sir, I'm not expect-
19 ing them to necessarily agree that it's relevant, but
20 I'm suggesting that if they want to object to its being
21 cross-examined, they should object at the time that it
22 goes in in evidence in chief, because if it's in before
23 you, I think it's something that can be tested and that
24 question of relevancy can be discussed in argument.

25 THE COMMISSIONER: Well, I don't
26 subscribe to that. I think that we'll have to deal
27 with objections as they arise and I don't want Counsel-
28 to feel that they have to go through those prepared
29 statements with a fine toothed comb and announce each
30 of them before each statement is read what passages they

Yates, Elkin
Cross-Exam by Bayly

1 object to. This isn't a Court of law. The rules of
2 evidence are not binding upon us and I would rather
3 proceed in the rather flexible fashion that we've
4 managed so far rather than get into a lot of legalistic
5 rules that wouldn't advance our proceedings. If this
6 were a Court of law, those rules would be binding on us
7 and would advance the proceedings, but I don't think
8 they would here. We'll just stick to common sense.

9 MR. BAYLY: Now if we can look
10 at this slide number two, --

11 THE COMMISSIONER: Let me say,
12 there were matters of substance in Dr. Pimlott's evidence
13 that were clearly relevant to the work of the Inquiry
14 and a useful beginning for the discussion that has followed
15 since. But the reflections that he offered us on the
16 Federal Government's decision making processes, seemed
17 to me were not helpful to me, certainly not in my
18 capacity as Commissioner of the Inquiry.

19 MR. BAYLY: I can appreciate
20 that sir. Can we go back to this slide, number two slide?
21 Now, you've looked at five, what you called, options -- and
22 Mr. Yates, you said maybe they weren't options, but that
23 was a word we could use for them.

24 WITNESS YATES: That's right.
25 I meant, by saying "options" that the Regional Planning
26 Committee doesn't have the choice to choose between
27 them.

28 Q Right, and you say that
29 because at page eight of the prepared evidence, I believe,
30 you say that some of the things are out of the hands of

Yates, Elkin
Cross-Exam by Bayly

1 the Regional Planning Committee and may be matters of
2 National Energy Policy?

3 A Between no development and
4 yes, correct.

5 Q Now what this is tied to,
6 as I understand Mr. Elkin, is gas and oil development
7 and development of no other kind. You're not discussing
8 the development of forest resources or minerals in the
9 regional plan at this point?

10 WITNESS ELKIN: Yes, we are,
11 except that slide, but that slide is not, because the
12 hydrocarbon development will be such a major component
13 in any development that takes place, if it goes ahead.
14 This brief outline here is done on the basis of that,
15 but certainly in the plan, it's very much the intention
16 that all other possible developments that could take
17 place in the region, nothing to do with hydrocarbons at
18 all, be explored. It is particularly important in option
19 number one if, in fact, no oil and gas development goes
20 ahead.

21 Q So, if we're talking about
22 how the delta communities will be affected by the
23 various options, and if you put no development down as
24 number one, and everything else in number one is
25 described as "none", you're only discussing, I suggest
26 to you, alternate development has been coincident with
27 hydrocarbon development, not as a substitute for.

28 A No. This particular slide
29 was intended only to show the -- make these comments in
30 relationship ^{to} hydrocarbon development and not the other

Yates, Elkin
Cross-Exam by Bayly

1 areas.

2 Q Here's the reason I say
3 that, because at page six -- sorrry -- at page twenty
4 of your -- of the report that you have held up for us,
5 under "Option One, No Hydrocarbon Development", in the
6 second paragraph -- Perhaps this is a reference to the
7 slide presentation. Under option number one, and I
8 invite you to agree that this was a statement that you
9 made, or say that you didn't make it.

10 "The people from the communities presently employed
11 in the oil and gas sectors will have to find jobs
12 elsewhere or go back to live off the land, at
13 least part of the time. Other jobs will be very
14 difficult to find because when the oil and gas
15 activities slow down, so will a lot of other
16 activities which rely heavily on the oil and gas
17 development in the delta."

18 Am I right in saying that that is a statement that was
19 made in your slide presentation?

20 A Well, I didn't make the
21 slide presentation, but I would assume that's correct.

22 Q That's not a statement
23 you're surprised at as being made with the slide presenta-
24 tion?

25 A No, I obviously would add
26 the comment that like any kind of this material, you
27 can always go back after the fact and pick holes in it.
28 The intent though certainly could leave the impression
29 there that if no hydrocarbon development takes place,
30 then the only option they would have is to hunt and trap,

Yates, Elkin
Cross-Exam by Bayly

1 and we do not feel that; certainly removing hydrocarbon
2 development would remove an awful lot of the possible
3 employment, but we do not suggest there are many other
4 opportunities that still would exist and in fact, in
5 the plan, we fully intend to pursue these other possible
6 areas. But I certainly agree that if you read, and you
7 read any of this material, and if you want to find fault
8 with it or interpret it in a way that it wasn't intended
9 to mean in the first place, one can do that, of course.

10 Q I'm not trying to attack
11 it, Mr. Elkin, I'm just trying to understand it.
12 I want to know how you went about looking at the plan
13 for the region, and it appears from that that you didn't
14 say that there wouldn't be any other opportunities for
15 employment, but that the major ones were tied to the
16 hydrocarbon development. If that's something you're
17 saying isn't true, well tell me now.

18 A Well, as I just said it
19 a minute ago, an awful lot of the employment is
20 tied to it but all of the employment in the delta isn't
21 restricted to that, of course not.

22 Q All right and you showed
23 the slide that I have here, I believe, that has a large
24 "A" and that it says "with no hydrocarbon development,
25 traditional activities; hunting, fishing, trapping,
26 logging and then other, not defined, equals a limited
27 choice in lifestyle", and that's part of the presentation.
28 You're familiar with that slide?

29 A That's true. There again,
30 you're asking me for an interpretation of the words what

Yates, Elkin
Cross-Exam by Bayly

1 that is really intending to mean and maybe not said in
2 as clear a fashion as it would be; but that is intended
3 of course, to mean, is that the lifestyle would, by and
4 large, be fairly close to what it is now, which is
5 somewhat narrower than it would be if hydrocarbon develop-
6 ment does take place.

7 Q It's probably not important
8 how you and I interpret it. What is of a concern to me
9 is how the communities interpreted it and what sort of
10 a reaction --

11 A That's correct. As you're
12 aware, now, I wasn't at the presentations myself, but the
13 slides were one of the two that was used. The two people
14 that the local Regional Planning Committee had asked to
15 speak were to outline in detail their comments on each
16 slide and any of the questions as you've asked, I would
17 have hoped that the particular people in the communities
18 would ask and they would have clarified the points, hope-
19 fully the same way that I have clarified them for you,
20 so that the wrong intention was not left.

21 Q So you didn't feel that the
22 impression that you'd left in the communities was that
23 if they didn't have hydrocarbon development, the future
24 looked pretty bleak.

25 A I would hope not, because that
26 certainly was not the intent whatsoever.

27 THE COMMISSIONER: Looked different

28 A Different.

29 MR. BAYLY:

30 Q When you were assessing the
kinds of impact and the degrees of impacts because you've

Yates, Elkin
Cross-Exam by Bayly

1 broken them down into five portions, what comparative
2 data did you use, if any, to decide what would be of a
3 medium, a minimal or a maximum impact?

4 A Well, these areas were
5 really just based on the common sense of the people that
6 sat down and developed these options. As I've said
7 before, and I want to emphasize again, these were material
8 developed not in any final form. It was material
9 developed for the people to discuss and if in fact if
10 any of the communities and the people in the communities
11 felt that our very preliminary assessment of the impact
12 of any one option was nonsense, and in terms of their
13 eyes they didn't feel that was a problem to them, or
14 in terms of their eyes that what we indicated
15 wasn't a positive benefit, that they would, in fact,
16 say so. This was simply rough material for -- to get
17 the people thinking in this area.

18 Q Did you get statistics
19 from Alaska, or from Fort McMurray, for example, before
20 you wrote up the regional planning document?

21 A I wouldn't say specific
22 statistics were not gathered particularly for this, but
23 obviously, many of the people involved have either been
24 to Alaska, read considerable material from Alaska, and
25 considerable material from similar developments that have
26 taken place elsewhere, plus relied on their own experience
27 and brought that knowledge altogether in one place and
28 from that, developed the options we have here.

29 Q Did the regional planning
30 document get written before you visited Alaska?

Yates, Elkin
Cross-Exam by Bayly

1 A It was written -- yes.
2 It was certainly before I went, that's correct.

3 Q Yes, and I've gather you
4 said in your evidence that representatives from the
5 communities went with you when you went to Alaska?

6 A That's correct. That's
7 right.

8 Q Did they have the regional
9 planning document given to them then before they went
10 to Alaska?

11 A That's correct.

12 Q Was this put together by
13 the Territorial Government staff or by the Committee
14 itself?

15 A It was put together by a
16 combination of the Federal and Territorial staff. That's
17 correct. The trip to Alaska, one of the basic intents
18 was to give the members of the committee the opportunity
19 to see, in fact, what the situation was there and what
20 was happening, and, in fact, that might -- we had hoped
21 it would of a major assistance to them in reviewing these
22 options to see if, in fact, some of the suggested events
23 that might happen here, if in fact they, after a trip to
24 Alaska, thought they would happen or in fact we should
25 change some of these options we have here.

26 Q Yes. Now, you didn't
27 change any after coming back, I take it. Is that right?

28 A They haven't made any
29 comments yet on this but certainly if the committee at
30 any time chose to do that we are certainly open to that

Yates, Elkin
Cross-Exam by Bayly

1 whole area.

2 Q Right. So this presentation
3 was made after you came back from Alaska -- the slide
4 presentation?

5 A That's correct.

6 Q Did you know you were
7 going to Alaska? I'm just curious why you didn't include
8 your Alaska observations in this report.

9 A Excuse me, I misunderstood
10 one of your first questions. With all that's been going
11 on I'm a little confused on the timing. These were
12 finalized after the Alaska trip so they certainly would
13 reflect any new information we had then. If you're asking
14 me if that really changed any of the basic stuff we had
15 before, I don't think so, no. Not to my knowledge.

16 Q Now, you've talked on page
17 eight of your evidence -- You've talked about the fact
18 that there are major factors which determine which
19 scenario will be realized in the delta and those, I
20 take it, are things that you felt were beyond the scope
21 of your Regional Planning Committee? Is that correct,
22 Mr. Elkin or Mr. Yates?

23 WITNESS YATES: That's a
24 national, you mean, national decisions?

25 Q Yes.

26 A Yes.

27 Q Right. Now, you've also
28 said in your evidence that the question of land claims
29 as they relate to development are also something, which
30 as I understand it are beyond the scope of this committee.

Yates, Elkin
Cross-Exam by Bayly

1 Is that correct?

2 A That's correct. Of course,
3 should land claims be settled, then it will set up a
4 different disposition of land within the delta, presumably,
5 I make some assumptions, but one would hope that the
6 regional plan would incorporate all people in that
7 region continually, just the same as it does in a province
8 where some land is privately owned and some is publicly
9 owned. The need for cooperative planning between the
10 different owners is still a requirement.

11 Q Now, Mr. Elkin, you've
12 stated that some of the communities said that they
13 weren't interested in participating in the regional
14 plan until the settlement of land claims.

15 WITNESS ELKIN:- There are people
16 in some of the communities that apparently during the
17 presentations in the communities that said that they --
18 not only did they not want any development until land
19 claims were settled, but they didn't want any planning.
20 In other words, inferring that if you did any planning,
21 that may well influence the settlement of the land
22 claims.

23 Q Did you see land claims
24 proposals and negotiations as being a method of planning
25 that people were attempting to employ, or did you not
26 look into it that deeply?

27 A Certainly, the land claims
28 is a very important aspect of planning and to follow up
29 a little bit further on what Mr. Yates said, certainly
30 as soon as any information is available, on land claims

Yates, Elkin
Cross-Exam by Bayly

1 much more so than is known now, whenever that information
2 is available it certainly is intended that it be fully
3 incorporated within this plan because, you know, there's
4 no question of us planning with our eyes shut and planning
5 in areas that obviously that could be affected by what
6 happens to these claims.

7 Q And is that one of the
8 reasons you feel the plan has to be kept open-ended.

9 A That's correct, because
10 obviously the land claims, depending on what happens,
11 obviously are going to have a very key bearing on what
12 happens within the north and obviously, therefore, any
13 long-range plan obviously has to take those land claims
14 into account, certainly.

15 Q Now, I take it you have --
16 that's one of my consultants getting out of hand, Mr.
17 Commissioner.

18 THE COMMISSIONER: I think he
19 feels your cross-examination is taking too long.

20 MR. BAYLY: These things have
21 to be left in the hands of Counsel, sir. I notice you
22 haven't put in your various options so the possibility
23 that development would not occur before the land claims
24 were settled and did you consider that as an option that
25 should be included?

26 A I didn't quite get that
27 point. Your point again please, is --

28 Q In your options or choices
29 that you had outlined in your evidence, you didn't
30 consider the option that there may be no major hydrocarbon

Yates, Elkin
Cross-Exam by Bayly

1 development until the settlement of native land claims?

2 A Yes, we did. In fact,
3 land claims, of course, we don't see that as an option
4 by itself. We see it such a possible major element that
5 it affects all those options and maybe we should have
6 made it clear there that it would be taken into account
7 in whatever option we choose. It's a basic element in
8 any option.

9 Q So you're just saying that
10 that was something you felt was out of your hands like
11 the question of whether hydrocarbon development goes
12 ahead in this area or not.

13 A That's correct. Now, we
14 certainly intend and have intended all along to take it
15 into account as soon as there is enough information
16 known that we can take it into account.

17 Q Right. Why did you leave
18 out the minimum and maximum impacts?

19 A Well, when we say they're
20 left out, our thinking at this point is that those are
21 two of the extreme options that we feel in terms of the
22 goals of Canada for the north and the Government of the
23 Northwest Territories and therefore of the people them-
24 selves, that those two options we suggest would not maximize
25 the benefits to the people of the Northwest Territories
26 and play down the problems that we could have.

27 THE COMMISSIONER: The Prime
28 Minister said something about land claims on the news
29 this morning. I don't know whether you heard it.

30 A No, I missed it.

Vatou, Elkin
Cross-Exam by Bayly

1 THE COMMISSIONER: He said
2 when questioned by the students of Pearson College of the
3 Pacific that he favored the land claims being settled
4 before any major development occurred. I don't know
5 what ramifications that entails in terms of the develop-
6 ment of policy here in the north, but watch for further
7 developments -- further bulletins, I should say.

8 MR. BAYLY: Now in this white
9 volume that you've handed out in the region, you've
10 said at the second page of the volume at the last para-
11 graph :

12 "What we require next is that people of the delta
13 choose the option or options which suit their goals
14 best".

15 You make the assumption, I take it in that, that they
16 will choose one of the options you've outlined?

17 A No, as I've said before,
18 they could choose some of those options or if, in fact,
19 those don't cover all the options and they want another
20 option or a combination of options to form the basis of some
21 more planning, we certainly would be prepared to move
22 ahead along those lines. So, they were not -- they are
23 not and were not restricted to those five.

24 Q I gather the Inuvik Town
25 Council has looked at these options and they voted down
26 one as unacceptable, and that being the, no pipeline option?

27 A That's correct.

28 Q So they, by implication,
29 I take it, were prepared to accept both minimum and
30 maximum impact and those are two that you haven't worked on

Yates, Elkin
Cross-Exam by Bayly

1 A No. They gave an indica-
2 tion of the option that they -- options that would
3 prefer followed and I stand to be corrected, but I
4 believe they chose option either three or four.

5 MR. GOUDGE: I wonder, sir,
6 if it might be appropriate to break for coffee. It's
7 twenty past three.

8 THE COMMISSIONER: All right.

9 (PROCEEDINGS ADJOURNED AT 3:20 P.M.)
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

A.B. Yates, L. Elkin
CROSS-Exam by Bayly

(PROCEEDINGS RESUMED AT 3:40 P.M.)

THE COMMISSIONER: Let's come to order again, ladies and gentlemen .

MR. BAYLY: Referring to page 8 of your prepared evidence, you've talked in the second paragraph about a number of major decisions that would have to be made, and a number of decisions that would involve trading off benefits against disruptions. Now, from the assessment that I have of your regional plan, you've included the following: concerns about employment, job training, communications, transportation, physical infra-structure. Now can you tell me other areas that you either have examined or plan to examine, in the area of potential social impact?

WITNESS YATES: Land use, yes I think that was one that I covered earlier. That's a pretty all-encompassing one.

Q Now, have you considered, or do you anticipate considering in the social field, mental health, family breakdown, health delivery systems, alcohol abuse, crime, juvenile delinquency, and environmental health, which as I understand the term, refers to sewage facilities, water treatment, and that sort of thing.

WITNESS ELKIN: Yes, we're considering all of those areas.

Q And are those all areas that will be discussed in your Regional Planning Committee?

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 A Most certainly.

2 Q Now when you say you are
3 considering, have you begun to consider all of those,
4 or are they on the plate for later on?

5 A I can't say to what
6 extent in where they stand right now. There's a lot
7 of base line material that has already been collected
8 in those areas, to indicate what the circumstances are
9 now, but I can't give you in very specific terms
10 exactly what state we're in at this point.

11 Q They're not listed in the
12 research that is going on, and I just wonder if it's
13 because you haven't got to the stage of assigning people
14 to do this.

15 A People are assigned --
16 which list of research are you referring to?

17 Q That's this one on page 8,
18 talks about -- of your evidence, that is.

19 A Well, that list of course,
20 I assumed that was implied, but maybe we should have
21 clarified it, that is only a very partial list. Just
22 to give you very broad indication of the fields we're
23 going over, but there's many, many areas that are not
24 shown there that are to be covered within the plan.

25 Q And that would apply as
26 well to your list on page 10?

27 A Yes, that's correct.

28 Q So that's only a partial
29 list?

30 A That's strictly a partial

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 list, strictly. A very rough list and no more.

2 Q So it might be necessary
3 to modify the slides that you showed. One of the slides
4 you showed had Canada in a box on the left, the
5 Northwest Territories --

6 THE COMMISSIONER: Excuse me,
7 do you have an extra copy of this; it wasn't that
8 newspaper, in the form of a newspaper, was it?

9 A No, there was material
10 put together, I think a copy of the slides, when the
11 slide presentation was made, and that's what they're
12 referring to.

13 MR. BAYLY: Sir, we can have a
14 copy made, for the information of the Inquiry, and I'd
15 be quite happy to let you have a look at this one.

16 Now, the slide has Canada on
17 one side and the Northwest Territories on the other, and
18 arrows pointing from one to the other, and the arrows
19 pointing to the south, say pipeline, and the arrows
20 pointing to the north, the arrow pointing to the north
21 says benefits. I take it, when you've assessed these
22 other things, it may be necessary to say that you need
23 more arrows.

24 A That could be. As I
25 indicated before, there was a commentary that went along
26 with the slides, and since I wasn't at the presentation,
27 I can't confirm exactly what was said at that point;
28 but the slide as themselves were never intended to be
29 shown just as slides, and not with a verbal commentary
30 taking place at the same time.

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 THE COMMISSIONER: I think,
2 Mr. Bayly, we can take it that this drawing was perhaps
3 an oversimplification, but it's just to illustrate the
4 central thesis of the planning group, as I understand
5 it.

6 MR. BAYLY: I have a set of
7 notes here on the commentary that accompanied the slides
8 and with regard to that slide, I understand that the
9 following was said, and you can tell me if you think
10 this is what you'd understood was said.

11 THE COMMISSIONER: Well,
12 excuse me Mr. Bayly, why does this assist me? This is
13 what someone, commenting on a slide, said to somebody
14 in one of these communities. Now, presumably, you're
15 not going to cite it to demonstrate to me what the
16 impact is likely to be.

17 This Inquiry has to report to
18 the government, what the impact, social impact let's
19 say, will be. Now if someone employed by the government
20 speaking at a meeting in Inuvik, or Tuktoyaktuk, offered
21 a rosy kind of outlook on pipeline construction,
22 presumably you're not asking me to accept that
23 proposition; but if that's not the reason why it's being
24 advanced, where does it get me?

25 MR. BAYLY: Mr. Commissioner,
26 the reason that I'm advancing this kind of evidence
27 for cross-examination, and will be advancing certain
28 evidence in chief, in the same vein; is because I think
29 and will be making recommendations to you, that the
30 processes of involving people in the planning of this

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 hydrocarbon development, may very well form some of the
2 long-term impact of this development. If they are
3 included in a way that is meaningful to them, then the
4 development may occur with fewer social impacts, than
5 it does if they're included in a way that has no meaning
6 to them, and I will be submitting to you sir, that there
7 are certain ways of going about planning, not just for
8 this pipeline, but for what will inevitably follow it.

9 THE COMMISSIONER: You're about
10 to suggest that this statement you're going to read is
11 the way not to do it, presumably.

12 MR. BAYLY: Yes.

13 THE COMMISSIONER:

14 Well, when do we get to the
15 "how to do it" part?

16 MR. BAYLY:

17 Hopefully next week, sir.

18 THE COMMISSIONER:

19 Well, I'm not very happy
20 about this. I'm certain that I heard this on the radio
21 anyway one evening, when I was sitting in my room at
22 the hotel, minding my own business, and I'm not
23 particularly anxious to hear it again, because I just
24 think this is opening up a lot of ground that has
25 already been plowed in public, and I don't see why we
26 have to plow it up again, here.

27 I'm concerned that we determine
28 what we, the Inquiry, that the Inquiry makes a determin-
29 ation as to what the ^{impact} impact is likely to be, tells the
30 government, makes recommendations; if in the meantime
the Regional Planning Committee has been to the
communities, has suggested to them what the impact is
likely to be, and they have rejected it, one gathers,

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 from the dialogue between Mr. Elkin and you, it must
2 be apparent to the Government, that that particular
3 way of going about consulting the people in the
4 communities isn't helpful, and Mr. Yates and Mr. Elkin
5 have indicated that they're committed to consultation
6 so far as this committee is concerned.

7 I just don't think it's helping
8 us to have you read that to Mr. Elkin. Mr. Elkin will
9 presumably say that the man who did it is an employee,
10 did it right, did it wrong, and then we go on to something
11 else. I'm really not interested; I just don't think
12 it's going to help me.

13 MR. BAYLY: I'll leave it at
14 that.

15 Q
16 You've listed in the components
17 that went into your regional plan, in the list at the
18 back of your evidence just before the slides, under the
19 heading "Planned Components", an item called "Formulation
20 of Alternate Development". Is that an alternative to
21 hydrocarbon development, or is that subsidiary
developments to hydrocarbon developments?

22 WITNESS ELKIN: No, there's
23 a word missing there. That refers basically to the
24 five options, or the five options were developed out of
25 that component plan, so that's what that refers to.

26 Q That refers to hydrocarbon
27 development only?

28 A No, that refers to the
29 five options, one of which is no hydrocarbon.

30 THE COMMISSIONER: What page

A.R. Yato, L. Elkin
Cross-Exam by Bayly

1 is that, Mr. Elkin?

2 A Let's see, the third page.
3 from the end, there isn't a page number on it.

4 Q Not your statement, you
5 mean this yellow --

6 A The statement, yes.

7 MR. BAYLY: You've referred at
8 the bottom of that list to "native culture", and you
9 said that the department responsible for that is
10 Natural and Cultural Affairs, of the Government of the
11 Northwest Territories. I take it from that, that that
12 is not going to be part of your Regional Planning
13 Committee's ambit, or area of responsibility.

14 A Yes it is, as a matter of
15 fact. That particular department, we gave it to them
16 because of the Government Departments it seemed to be
17 that they had the best scales to develop our study in
18 that area. They looked at it, they approached the COPE
19 organization, and said that maybe COPE or the Regional
20 Planning Committee itself, could better carry out that
21 component, and that's where it now stands. We are not
22 doing work in that area, because we really feel that either
23 individual members on the Regional Planning Committee,
24 the local one or the Committee itself, could really best
25 carry out the studies in that area.

26 Q You then approached COPE
27 in a formal way, and said that you'd like --

28 A The Department of Natural
29 and Cultural Affairs has, I'm not sure if it's been just
30 through trips here; however I know they have been

A.B. Yates, L. Elkin
Cross-Exam' by Bayly

1 approached on it.

2 Q Once you have your native
3 culture input, what role does that play in the planning
4 process for this region?

5 A Well, all that indicates,
6 and that there again is a rough list of the areas that
7 are to be pursued in the plan, but it's one very
8 important aspect of the plan.

9 Q Now, we've seen in
10 the regional plan, and we've heard from various
11 witnesses about certain goals for this region. Some
12 of those goals, you've said in your evidence, may come
13 from the outside, they may be national goals that we
14 in this area may have no power to change, except as
15 citizens of the country and our voting procedures,
16 et cetera; and then there are local goals, some of
17 which are local government goals, and some of which
18 may be goals of the people as individuals or aligned
19 in different groups. You'd agree with that?

20 A That's correct.

21 Q Now we heard from Dr.
22 Hobart in earlier evidence presented to this Inquiry,
23 about the Nortran training program, and that's a program
24 as I understand funded by both government and industry,
25 and the objectives of that program are to train
26 northern people, mainly native peoples, Indians, and
27 Eskimos and Metis, to do jobs in the hydrocarbon industry.

28 Now, we heard from the oil
29 companies, when they presented their evidence a few
30 weeks ago, that these goals, are goals of government,

A.D. Yates, L. Elkin
Cross-Exam by Bayly

1 as opposed to goals by industry. They've co-operated
2 with them, but they are government goals.

3 A Could you clarify, which
4 goals are you referring to?

5 Q These are the goals of the
6 Nortran program, to train native peoples, in particular,
7 to do jobs in the hydrocarbon industry.

8 THE COMMISSIONER: That's being
9 done isn't it by Canada Manpower; isn't the funding that
10 supplements the costs of taking those people to Alberta,
11 pays a part of their wages the first few months --

12 MR. BAYLY: I think that's the
13 machinery, yes.

14 THE COMMISSIONER: That's the
15 Canada Manpower.

16 MR. BAYLY: The machinery part,
17 yes.

18 THE COMMISSIONER: Well, it's Canada
19 Manpower's policy to support the training of people that
20 want to be trained, isn't that all there is to it?

21 MR. BAYLY: I don't think so
22 sir. I'm referring now to a volume called "Canada's
23 North - 1970 to 1980" from the Department of Indian and
24 Northern Affairs. I understand this to be a goal of
25 this department. Turning to item 4, in "Guidelines For
26 Social Improvement", it states that,

27 "The government has set out the following guidelines
28 for social improvement, to be acted on by all
29 departments and agencies in the north."

30 I assume that includes your departments, does it

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 gentlemen?

2 WITNESS YATES: Yes, it does.
3 You're mistaken if you're referring to that document
4 as a document of the Department; it is a government
5 document.

6 Q I see.. It has your crest
7 on the top, it says "Indian and Northern Affairs".

8 A Cabinet, it's a government
9 decision, a Cabinet decision to pay off those objectives,
10 guidelines and priorities.

11 Q It doesn't prove therefore,
12 the goals that the Department of Indian Affairs will
13 be pursuing.

14 A Absolutely.

15 Q And one of these sir, is
16 to consciously create in government and industry,
17 employment opportunities for native peoples, through
18 attractive incentives, meaningful targets, and where
19 necessary, imposed obligations. You're aware of that,
20 are you Mr. Yates?

21 A Yes.

22 Q And in this program,
23 Nortran Program, there is a facility provided for
24 carrying out this objective.

25 A Yes.

26 Q And, we've heard from
27 Dr. Hobart and others, that this program may have to
28 give preferential treatment to native peoples, to help
29 them upgrade, and to give them jobs that they might not
30 otherwise get if they had to compete in a completely

A.B. Yates, L. Elkin
CROSS-Exam by Bayly

1 free-labour market.

2 A Yes. I don't know if you're
3 referring specifically to the Nortran program, but to
4 the implementation of this policy, that's correct.

5 Q And the objectives are as
6 set out in this document.

7 Now, if we could go on.
8 Do we have power? We are battery operated now.

9 Now, I take it this policy, of
10 the Cabinet, imposes extra costs on both government and
11 industry?

12 A Yes, it does.

13 Q And, in the implementation
14 of this policy, and I won't refer to specifically to
15 Nortran because Mr. Yates, you seem more acquainted
16 with it in other areas. Do you do cost benefit analyses,
17 to see how this policy is working out?

18 A We have done, yes. It's
19 very difficult though, to quantify the benefits, that
20 there's many of them perhaps are intangible. If you
21 mean in terms of quantifying the benefits with the
22 number of jobs obtained, yes; but we would assign a
23 higher value than simply the value of that job.

24 Q But that's the only way
25 in which you can quantify it, I take it?

26 A Yes.

27 Q With regard to the
28 intangible benefits that you have referred to, have you
29 defined what those are?

30 A No, I don't think so,

A.B. Yates, L. Elkin
CROSS Exam by Dayly

1 I think that that's looked at perhaps more from
2 experience. In other words, if the employment
3 opportunities created are filled, and the people who
4 fill them remain at work and enjoy what they're doing,
5 and improve their own quality of life in the process,
6 that's the sort of standard one tries to apply; but
7 in terms of criteria, I would say there's been no sort
8 of precise analysis done.

9 There have been a number of
10 studies carried out, and I'm afraid I can't cite them
11 right now, but there have been a number in relation to
12 the Gulf employment program, for example, at Coppermine,
13 that's one study that's quite widely looked at. There
14 was another study done in relation to PanArctic
15 employment programs, and so on.

16 Q Now, we've had in your
17 evidence that the decision as to whether oil and gas
18 development continues in the Mackenzie Delta region is
19 one that's a national policy, but is it the opinion
20 of your department that this is the only basis for
21 large scale development in the western Arctic?

22 A At the current time, yes.

23 Q And do you see this as
24 the only viable option for improving the status of
25 native peoples?

26 A Not necessarily. It's
27 the source, obviously, of economic development in the
28 Territories, the natural resources, be they oil, gas,
29 mining, forestry, water.

30 Q And are there any others?

A.B. Yates, L. Elkin
CROSS-Exam by BAYLY

1 A Oh, there are many other
2 possibilities, but we're talking about major economic
3 development, and I think not beyond that.

4 THE COMMISSIONER: I understand
5 what you say about oil and gas, as the major development
6 on the horizon. You said mining, and forestry, and --

7 A Water --

8 Q Water.

9 A -- as a major resource.

10 Q Yes, but no one has come --
11 we have here a company that wants to build a pipeline;
12 and it's being considered now. That converts a
13 hypothetical situation into a pretty concrete one.
14 You weren't linking water and forestry and mining to
15 the oil and gas industry, were you?

16 A No, I was asked, I thought
17 what other major --

18 Q Oh I see.

19 A -- economic developments
20 were possible, if the oil and gas option were ruled
21 out, I take it.

22 Q Oh, I see.

23 MR. BAYLY: All right, and
24 I take it that that doesn't exclude what the Commissioner
25 has suggested, that the development for example of
26 the water resources for power might not be something
27 that would happen in conjunction.

28 A It seems very unlikely
29 that it will. There was at one time a proposal that
30 the pumping stations might be powered by electricity,

A.B. Yates, L. Elkin
CROSS-Exam by Bayly

1 but that seems to have been set aside for at least this
2 particular pipeline.

3 Q Now, when you're talking
4 about then the -- you've separated in your answer the
5 improving of the status of native people from major
6 industrial development. They don't necessarily mean
7 the same thing. I take it from that that you assume
8 that there are ways in which the status of native people
9 can be improved, either apart from or in the absence of
10 major hydrocarbon development.

11 A Yes, there are the same
12 ways of course, that are being used in the eastern
13 Arctic, at this time. ^{One} One of the problems, and I think
14 everybody will appreciate this, is the absence of an
15 economy on which to base those programs.

16 Q You're referring, I gather,
17 to arts and crafts, and some processing of meats and
18 fish, and the occasional mine.

19 A Yes, plus a bit of
20 tourism.

21 Q Yes. I understand in this
22 policy for the '70's, that the Government's policy is to
23 provide for a higher standard of living, quality of
24 life, and equality of opportunity for northern residents,
25 by methods which are compatible with their own
26 preferences and aspirations. That's found on page 10
27 of this document that I have before me. Do you feel
28 that the government's policy with regard to hydrocarbon
29 development is in accordance with the aspirations and
30 preferences of northern peoples, and particularly

A.B. Yates, L. Elkin
Cross-Exam by BAYly

1 northern native peoples.

2 THE COMMISSIONER: Mr. Bayly,
3 I've got these seven objectives before me, which
4 Mr. Chretien laid before the Parliamentary Committee
5 in 1972. If, surely you're arguing with, or at least
6 seeking to argue with Mr. Yates; if you -- presumably
7 he feels he's carrying out government policy, and his
8 Department is, where does this get us? This is a very
9 worthwhile objective laid down here, the Government's
10 committed to it, so is the Department, so is Mr. Yates;
11 so is Mr. Elkin.

12 MR. BAYLY: Mr. Commissioner,
13 all I'm asking, and I'm not seeking to argue with the
14 witness, I don't think I've shown any signs of that;
15 all I want to know is whether the planning which is to
16 be compatible with the preferences and aspirations of
17 native peoples, is the hydrocarbon planning, or whether
18 it's some other kind of planning; and it may be
19 separate, I don't know. Mr. Yates has certainly
20 suggested that there may be reasons why it should be
21 separate.

22 THE COMMISSIONER: Well -- go
23 ahead, Mr. Yates.

24 WITNESS YATES: I'd just like
25 to respond that the fourth, sorry, the third objective,
26 is to encourage viable economic development so as to
27 realize potential contribution to the national economy,
28 and the material well-being of Canadians; and I think
29 it is clear that major hydrocarbon development in the
30 delta is dedicated towards that objective. Now if you

A.B. Yates, L. Elkin
Cross Exam by Bayly

1 accept that premise, that that is a requirement to
2 meet the needs of the national economy, then in order
3 to fulfill the requirements of the first objective, you
4 have to try to make that the method by which that
5 hydrocarbon development is carried out, compatible with
6 that first objective; and I think that is the purpose
7 of the programs we have been discussing earlier. To
8 make the kinds of training programs, the kinds of
9 employment opportunities, the kinds of service industries
10 or supplementary activities that may develop; such that
11 they are compatible with the preferences and aspirations
12 of the native people.

13 MR. BAYLY: I take it then,
14 that your Department, in order to carry out this policy
15 for the '70's, must inform the government of what the
16 preferences and aspirations of the northern peoples,
17 and in particular the northern native peoples are.

18 A I think in many cases
19 they do that themselves, adequately; but indeed we
20 certainly pass the message on.

21 THE COMMISSIONER: To be fair
22 to the Government, as we all seek to be, isn't the
23 Government in establishing the Inquiry, providing a
24 means for native peoples to say what their aspirations
25 are, and giving them an opportunity to relate those
26 aspirations to the proposed development? You don't have
27 to answer that question.

28 MR. BAYLY: No, I don't
29 think it's my place to answer that, so maybe Mr. Yates
30 can answer that.

A.B. Yates, L. Elkin
CROSS Exam by Bayly

1 Q In regard to the
2 employment policy of the government, have you done
3 research into how that policy can best be implemented
4 in the western Arctic.

5 WITNESS YATES:
6 Research, there are a
7 number of studies I guess that have been carried out
8 in relation to different types of activities, yes.

9 Q And then, what are those?

10 A There's a study on
11 entrepreneurial opportunities, I think correct. Have
12 you in mind other ones, Larry?

13 THE COMMISSIONER: Dr. Hobart
14 referred to some of these studies, as I recall,
15 including the study by --

16 WITNESS ELKIN: I can't name
17 those offhand, but certainly if the Inquiry wanted this
18 information, we could table before it the various ones
19 that are being carried out.

20 THE COMMISSIONER: Well I think
21 the Inquiry's got access to, and has in fact examined
22 these studies.

23 MR. BAYLY: I wouldn't mind
24 seeing a list of them, Mr. Commissioner, just to make
25 sure that we are aware of all of them; we might have
26 missed one or two.

27 MR. GOUDGE: They all appear
28 on the list of government documents that we have sir,
29 but if a special list would assist my friend, I'm sure
30 that --

THE COMMISSIONER: Well, Mr.

A. B. Yates, L. Elkin
CROSS-Exam by Bayly

1 Goudge, you might use Mr. Wick's good offices to see
2 that there's no study that isn't provided to COPE along
3 that subject.

4 MR. GOUDGE: We'll prepare a
5 special Bayly list.

6 MR. BAYLY: I certainly don't
7 want a list that's duplicating the one we already have,
8 but if there's something new I'd like to know of it.

9 THE COMMISSIONER: Mr. Smith,
10 his study was discussed by Dr. Hobart.

11 MR. BAYLY: Now, I understand
12 that an Advisory Committee of Northern Development,
13 Subcommittee on Employment was established in the early
14 seventies, is that correct?

15 WITNESS YATES: That's correct.
16 I don't know about the date, but it sounds reasonable.

17 Q Yes. That was the vehicle
18 by which the studies were --

19 A Not all of them. Some of
20 them have been carried out by the Territorial Government,
21 some of them by my own administration.

22 Q And was there such a
23 committee on the task force, on northern oil development,
24 or did it rely on the Advisory Committee of Northern
25 Development?

26 A It relied on the Advisory
27 Committee on Northern Development to a large extent, with
28 the exception of the Environmental Social Committee of
29 the task force on northern oil, which conducted some
30 independent studies.

A.B. Yates, L. Elkin
CROSS-Exam by Bayly

1 Q Were the Territorial people
2 on the Advisory Committee of Northern Development, or
3 was this --

4 A They were represented on
5 the Advisory Committee of Northern Development, yes;
6 they were not represented on the Environmental Social
7 Committee, per se, but their co-ordinator participated
8 in the development of the study program.

9 Q And was this a committee
10 that consulted with the native peoples, or was it an
11 internal Government committee?

12 A That was an internal
13 Government committee.

14 Q And was it a committee
15 that consulted with major unions?

16 A No, it was a committee
17 that produced the research studies, I think, that
18 preceded the formulation of this Inquiry; and their
19 entire list of studies is of course with the Inquiry.

20 Q And so one of their
21 recommendations, you're saying, was the setting up of
22 this Inquiry, or was it just -- did it just precede --

23 A No, it was coincidental.

24 Q And did they make
25 recommendations that have been implemented in carrying
26 out of this policy?

27 A They submitted a report
28 to the task force on northern oil, which again I think is
29 one of the documents on record here.

30 Q Do you have the name of that,

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 it seems to have surprised my consultant here?

2 MR. GOUDGE: Once again we can
3 supply them.

4 A I think if Mr. Goudge was
5 to speak to Dr. Fyles, he would know it.

6 MR. GOUDGE: We'll put that on
7 the Bayly list.

8 WITNESS YATES: It had a
9 colorful cover, I remember that.

10 MR. BAYLY: These recommendations
11 get communicated publicly, or was it communicated only
12 through this report?

13 A That was the public
14 document, it was issued through the Queen's Printer.

15 Q It wasn't a case of this
16 being a program where you took the recommendations into
17 the north, to find out whether they were ones that the
18 people --

19 A Well, in the conduct now,
20 I can't sort of be precise in all of these, but in the
21 conduct of the studies that were carried out under the
22 Environmental Social Program, a number of them did indeed
23 involve consultation in the course of the study as such.
24 A number of them perhaps did not, but there was no
25 precise pattern, it was really the research or the
26 nature of the subject, and those two factors determined
27 whether indeed it was a requirement or not. Some of
28 them were simply base line studies, you understand.

29 Q Now on page 8 of your
30 evidence again, there's a sentence in the second

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 paragraph which says that,

2 "To begin, fundamental trade-offs exist in
3 realizing the objectives of maximizing benefits
4 and the minimizing of social disruptions.";
5 and when you're talking about "social disruptions" I
6 assume you're talking about what we've come to call
7 social impact, is that correct?

8 .A Yes, I suppose so. It
9 seems close. I haven't been --

10 Q Now, you define "social
11 impacts", I take it, for the purposes of doing your work,
12 and perhaps either you or Mr. Elkin can tell me how
13 you came to define that; so that you could know what
14 to include in it?

15 WITNESS ELKIN: Okay, the list
16 of social impacts -- possible social impacts that we've
17 come up with at this stage, and our planning of course
18 is very broad; and it's really based on information
19 gathered from a whole series of areas.

20 One, it's obvious based on the
21 experience of our own Territorial staff, who are already
22 carrying out social programs in a broad area; and the
23 problems that we're already having at this time, in
24 those areas. So, we have a pretty sound body of
25 knowledge and expertise among our own staff.

26 Obviously as well, we've been
27 relying on the information, either in reports, or verbal,
28 or whatever form it has come out; that has been presented
29 here to this Inquiry. In addition of course, we've
30 been relying on reports of the social impact of what is

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 happening in Alaska at this time.

2 So what I'm really in effect
3 saying is that we're relying on information from whatever
4 reliable source that we're able to obtain it at this
5 point.

6 Q And inherent in that, I
7 take it, is the way of assessing social impacts, so that
8 you can tell whether they're going to be minimum,
9 maximum, or somewhere in the middle; and have you had
10 your people working on that, so that you can scale the
11 possible --

12 A Yes, we have. We have our
13 people working on that to determine the various social
14 problems that could occur, whether it's related to
15 drinking or drugs or whatever it happened to be, child
16 abuse or child miscare, or other problems. Excuse me,
17 I lost my train of thought there.

18 Q Well, I understand what
19 you are saying to be that you assess in the individual
20 areas, that you consider to be areas of impact, the
21 severity of them. I take it that child beating is a
22 result of alcohol abuse, worse than falling down on
23 the street and being taken to the police station to dry
24 out.

25 A That's correct. No, we
26 are researching them and the point I was going to make
27 came back to me. A very critical element of the local
28 input to the plan is precisely in these areas, because
29 even with all of the experience that our particular
30 staff might have, or with all of the knowledge that they

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 might glean from these hearings, and other areas; the
2 things that we view as social problems, social problems
3 that we view as being large or small, may in fact not
4 be the same problems or the same magnitude of the
5 problems to the people that are going to be hurt, so
6 therefore this is one particular area where we feel the
7 local input to the plan is so important, so the people
8 can in fact tell us whether these things, as we see
9 problems, to them really are problems, or not. Some
10 things that we see as not being problems, are ones that
11 they perceive as being problems.

12 Q So you're prepared to use
13 a local subjective test on social impacts to help you
14 assess how the people feel about these things?

15 A Most certainly, positively.

16 Q I take it that you
17 differentiated then from social as opposed to economic
18 impacts, something which causes inflation, in some ways
19 to be seen as separate from something -- or seen as a
20 separate impact from alcohol abuse, for example.

21 A Well, we would look at
22 them as impacts by themselves, but obviously all of these
23 interrelate. By solving one problem, you may be
24 solving two or three others. By not solving a particular
25 problem, it may have complications in three or four
26 other areas as well.

27 Q All right. So, in getting
28 back to your trade-offs here on page 8, you have to
29 assess having taken in local input; the social impacts
30 as opposed to the benefits, which I am assuming you are

A.B. Yates, L. Elkin
CROSS-Exam by RAYly

1 saying are employment opportunities, and an economy that
2 can help contribute to the Canadian economy as a whole.

3 A Employment benefit we
4 would see as a benefit to those who want to be employed,
5 and there may be some local people that do not want to
6 be employed on wage employment, and for them it would
7 not fall into that area, and that kind of viewpoint
8 would be taken into account in the plan, too.

9 Q Now Mr. Yates, in the
10 question of social impacts of the pipeline, has your
11 department done assessments of the social impacts, to
12 determine what is acceptable when you're trying to
13 assess the entire project, because you have to look
14 at the national interests, and balance it against any
15 regional problems, I suggest to you.

16 WITNESS YATES: Well, I think
17 what, you know one of indeed the purposes we would hope
18 of the Inquiry's considerations, will be to delineate
19 those impacts a bit more clearly. You're into a
20 judgemental area. What I see as a minimum impact, you
21 may see as a major impact, and there's no way you can
22 scientifically determine whether it is major or minor.
23 You have to use some form of judgemental process, and
24 I must confess I personally would hope that out of
25 proceedings of this Inquiry we would all have a much
26 better understanding, of what is a significant impact,
27 and what is less significant.

28 Q All right, Now, before
29 we ever got started though, the Federal Government
30 issued pipeline guidelines. One chapter of which, in

A.B. Yates, L. Elkin
CROSS-Exam by BAYly

1 volume 6, talked about the social and economic impact
2 regionally.

3 THE COMMISSIONER: You don't
4 mean the guidelines, you mean the social economic
5 program.

6 MR. BAYLY: Sorry, yes the
7 Environmental Social Program; and they follow the
8 guidelines, and in that, there is one suggestion that
9 there may be some social costs that you anticipated,
10 prior to this Inquiry's even starting.

11 A Yes, I think the studies
12 themselves identified the possible areas. To quantify
13 the difficulty I'm having, I think, is how you sort of
14 say that that is an unacceptable impact; an increase in
15 the number of alcoholics, for example, is certainly an
16 impact that one might anticipate. Now whether a 100%
17 increase is acceptable, or only a 25%, is something that
18 requires a different kind of examination, in my judgement,
19 the kind of examination that we are obtaining here.

20 Scientists I don't think
21 necessarily produce a valid judgement in that area; in
22 a sense that's the political level that has to assess
23 the merits and the demerits of those particular types
24 of impact.

25 THE COMMISSIONER: That
26 ultimately will be for the politicians. It's something
27 I suppose like the offshore drilling; there may well
28 be a risk attached to drilling contemplated by the
29 approval in principle. The Cabinet regarded that as
30 acceptable, if there were a proliferation of exploration,

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 and development in the Beaufort Sea, if large-scale
2 deep water drilling were under consideration, the
3 magnitude of the risk might be one that would be quite
4 different, and the Cabinet I have no doubt would look
5 at the matter afresh.

6 But, it is in the final analysis
7 for the Cabinet -- Parliament, people elected to govern,
8 to decide what is acceptable and what is unacceptable.
9 Even the function of prediction is one that is in many
10 ways judgmental, and subjective; because of course you
11 are not observing something that has occurred; you're
12 trying to predict what may occur. That's in many ways
13 a subjective exercise.

14 When you have done that, and
15 laid it before the politicians, then they have as a
16 matter of subjective judgement, to determine what is
17 acceptable and what is unacceptable. It's a -- but
18 it's for the politicians to decide, that's their job.

19 MR. BAYLY: You pointed out,
20 I think, a very difficult thing. If the Government is
21 expecting you to be able to tell them whether there will
22 be 25% more alcoholics or 100% more alcoholics, they
23 may be disappointed that you can't do that, as
24 suggested yourself, in your analogy.

25 THE COMMISSIONER: Well, I'll
26 do my best, there's a subjective element in my prediction,
27 that's all.

28 MR. GOUDGE: We haven't come
29 to phase 4 yet.

30 MR. BAYLY: I thought we were

A.B. Yates, L. ELkin
Cross-Exam by BAYly

1 always there.

2 Now, given that you are looking
3 to this Inquiry for that sort of help, you did nonetheless
4 under the Environmental Social Program, seek to get some
5 idea of what some of the social consequences might be.
6 Is that correct, Mr. Yates?

7 WITNESS YATES: Yes, so as to
8 improve the judgements that ultimately have to be
9 made.

10 Q And, in the area of possible
11 social impact, I gather we only have the one study
12 available and that is the one that's found in volume
13 6 entitled "Regional Impact of a Northern Gas Pipeline".

14 A I think you're probably
15 correct, but I couldn't sort of say that for sure.

16 Q That for the information
17 of the Inquiry is under part 4, sir, and it's called
18 "The Social and Economic Impact On Native Northerners
19 of Short-Term Wage Employment".

20 And that study, as I understand,
21 suggested that preferential employment as a policy would
22 not be a good idea.

23 A I believe you are right
24 in that respect, but the fact that the study was
25 published doesn't mean to say that everybody agrees
26 with it.

27 Q No, I understand that,
28 but what I'm interested to know is were other studies
29 done then, and you've said "no", and prior to the
30 formation of this policy for the seventies, which is

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 clearly distinct from that, the conclusions reached in
2 that report.

3 A The conclusions that were
4 reached, and now I'm sort of going back in memory.
5 That study is quite old, and so perhaps I shouldn't
6 be commenting on it, but it seems to me that they were
7 reached on some questionable precepts, that not everybody
8 accepted. They flowed logically in the form of a study,
9 and the study was accepted and published; but it was
10 open to question soon after publication, and there were
11 some sort of re-assessment of position.

12 Q But no --

13 A No definitive study, again,
14 to perhaps come out with a different conclusion, no,
15 that's quite correct.

16 Q So there was a thought
17 that maybe the study was wrong, but nobody studied to
18 see what was wrong with it.

19 A Well, you know, you're
20 asking me if somebody invested another \$50,000 in a
21 scientific study, and I would have to say they did not.
22 But to say that it was not studied again, is not correct.

23 Q Is the premise upon
24 which the policy is based with regard to giving
25 preference to native northern people, is it based on
26 the understanding that the traditional economy is no
27 longer able to sustain the total native northern
28 population?

29 A That's one of the reasons.

30 Q Are there others that you

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 can perhaps tell us?

2 A The standard of living is
3 significantly lower than the rest of the population,
4 in general terms, I should say, not necessarily
5 everywhere; but in general terms, the standard of
6 living of the native population is lower than that of
7 the balance of the population.

8 Q And are there other
9 reasons that you know of?

10 A Not offhand, but if you
11 gave me some time, perhaps I could think of some.

12 Q Well, if you did think
13 of some you might be able to tell us through Mr. Goudge.

14 Has the government considered
15 ways to improve the traditional or the renewable
16 resource based economy that does exist here, at least
17 to a certain extent?

18 A Yes, I
19 think I'd ask Mr. Elkin to answer that.

20 WITNESS ELKIN: One way it
21 has taken a very positive steps, I believe over the
22 last while, is to institute an outpost camp policy
23 which I believe you've heard of. In fact in this area
24 there is an outpost camp, I believe it's known as
25 Northstar Harbour. Money was provided to it over this
26 past year, to allow people who formerly lived at Tuk,
27 I believe, and under the overall administration of
28 COPE, who is handling the funds, for the program, for
29 this camp to be established at Northstar Harbour.

30 It was presented to Ottawa,

A.B. Yates, L. Elkin
CROSS-Exam by Bayly

1 through the Territorial forecast, for 1976 to 1977,
2 and was approved as a major new program; and a reasonably
3 substantial sum of funds are available for the upcoming
4 year, to establish more camps.

5 Q Is this policy, to
6 improve or expand the use of the renewable resource
7 based economy, something which you see as an element that
8 will be involved in your regional planning of the delta
9 area?

10 A Yes, because the purpose
11 behind the program is to give people who really want
12 to live on the land and get away from the community,
13 for whatever reason; whether it's because they don't
14 particularly like living in the community, what a
15 community has; or whether they just want to get back
16 to a way of life somewhat the same as they had before;
17 but it's to give them a certain amount of help that
18 they know beforehand, in going out and establishing a
19 camp, and knowing what kind of program support they're
20 able to get to establish that camp.

21 Also, another basic aim is
22 to allow the people who wish to pursue that way of
23 life to harvest resources in areas that they may not
24 be able to harvest properly at this time.

25 Q Have you formed any
26 opinion as to whether this is a successful kind of
27 project?

28 A There was only a small
29 amount of funds available last year, because a
30 treasury-board had not yet given overall approval to

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 the program; so the results are not in yet, but I
2 understand that a report on the Northstar Camp will
3 be prepared in the next while, and I hope we would find
4 out how the camp idea is going at this point.

5 We do not have any specific
6 feedback up till now, to my knowledge.

7 Q There have been, Mr. Yates,
8 earlier programs, not outpost programs, but some
9 that have attempted to use renewable resources.

10 WITNESS YATES: Yes, there
11 have been, with greater or less success, as the case
12 may be.

13 WITNESS ELKIN: If I could
14 add, you're quite correct; under our game staff there
15 are a large number of programs, all of which I don't
16 know the details of, and I'm not in a position therefore
17 to speak to the details, but we have several programs
18 related to giving assistance to trappers to get out
19 on the land, whether it be grub-staking, or to build
20 a cabin. There is support in those areas, and I
21 understand at this time, a considerable effort is in
22 fact, being made to expand on the programs.

23 Q Going back to the sixties,
24 the mid-sixties, there were programs initiated then;
25 fisheries, canneries, sawmills, tanneries, et cetera,
26 and they met with varying degrees of success.

27 A That's true. Some have
28 worked out fairly well, and others have not worked out
29 well, that's correct.

30 Q And those ones were

A.B. Yates, L. Elkin
Cross-Exam by Bayly

1 Federal programs?

2 WITNESS YATES: Up till 1967.

3 WITNESS ELKIN: And after that
4 they were ours, Territorial.

5 Q Now, a number of those
6 programs were abandoned. Was it because of a lack of
7 success, or was it because of a shift in policy to
8 developing something that would be more useful to the
9 national economy? Perhaps you could comment on that,
10 Mr. Yates.

11 WITNESS YATES: I don't think--
12 no successful programs, fully successful programs, to
13 my knowledge were abandoned. The less successful ones
14 perhaps were less successful not necessarily from the
15 native people's viewpoint, but perhaps from the fact
16 that the staff resources weren't available for them,
17 or even the financial resources. That may have caused
18 their dissolution.

19 Q So, in a sense, you had
20 various ways of assessing them then. Some would be
21 ones that were -- the people in the communities didn't
22 like, others would be ones that they may have liked but
23 there weren't the personnel or perhaps the funds to
24 carry them through.

25 A I think that's a fair
26 assessment.

27 Q So the opportunity for
28 some of them to be picked up again still exists?

29 A Yes, there are a number
30 which have gone through several different eras, the

A.B. Yates, L. Elkin
Cross-Exam by BAYly

1 same project coming up --

2 THE COMMISSIONER: The sawmill
3 resolution.

4 A -- yes, that's one that
5 particularly occurs to me.

6 MR. BAYLY:
Q And are these options
7 that you consider that should realistically be offered
8 to native peoples in the seventies?

9 A Yes, I think they're
10 very important.

11 Q Mr. Yates, will
12 you be assessing the ability to carry out some of these
13 options that have been tried before, that relate to
14 renewable resources, and their likely success if they
15 run along a parallel course to hydrocarbon development
16 in the delta?

17 A As a policy, that's
18 certainly the case. Now, it's in the field of
19 responsibility of the Territorial Government, so the
20 actual implementation agency would be that Government.

21 Q But the Federal Government
22 would be involved --

23 A It will support that
24 option.

25 Q Right. So that's a tool
26 that you have at your command, Mr. Elkin, as a possible --
27 either alternative, or addition to the economy potential
28 of this region.

29 WITNESS ELKIN: That's correct,
30 and we certainly would give it strong support, whether

A.B. Yates, L. Elkin
Cross-Exam by Bayly
Cross-Exam by Veale

1 hydrocarbon development goes ahead or not.

2 MR. BAYLY: Now, just going
3 back for a moment to the preferential employment
4 program. If it were communicated to you by native peoples,
5 that they preferred not to have a preferential
6 employment program, what sort of policy changes, if any,
7 would you be prepared to recommend to your government?

8 WITNESS YATES: I think that
9 would be the nature of the request. Are you implying that
10 perhaps no employment program as a requirement, or
11 no preferential employment program?

12 Q The latter.

13 A The latter, specifically.
14 Well, then I presume one would discontinue the
15 preferential nature of the program.

16 Q So that would be something
17 that you couldn't say at present, but it might occur
18 through the machine that Mr. Elkin is setting up?

19 A Yes. Obviously, if there
20 is no need for a preferential treatment, and that need
21 is demonstrated by desire of people to become employed;
22 if that need disappears, then there's no point in the
23 government trying to fulfill it.

24 MR. BAYLY: Those are all the
25 questions I have. Thank you very much, gentlemen.

26 MR. GOUDGE: There's a new
27 face in the crowd I think sir, has one or two questions.
28 Mr. Veale.

29 CROSS-EXAMINATION BY MR. VEALE ;

30 Q Mr. Yates, I understand

A.B. Yates, L. Elkin
Cross-Exam by Veale

1 you were the director of the Northern Economic Development
2 Branch in 1969, and then in 1973 you became the first
3 director of Northern Policy and Program Planning Branch.

4 WITNESS YATES: That's right.

5 Q Now, in these particular
6 jobs, would you have been involved with the Task Force
7 on Northern Oil Development?

8 A To some extent. More in
9 the context of a backup to the member of the Task Force
10 who at that time I think was either the Deputy Minister
11 or the assistant Deputy Minister.

12 Q You refer to Mr. Digby
13 Hunt, is that correct?

14 A Or Mr. Basil Robinson,
15 who I think was the member of the Task Force itself.

16 Q Could you outline then
17 the relationship of the Task Force with the Department,
18 or with Government in general, whether it was advisory,
19 or what its position was. Also, the relationship of
20 the Environmental Social Committee, which I understand
21 to be a committee that was struck by the Task Force.

22 A Yes, you're right in
23 that respect. I'll have to sort of rely on my memory,
24 and I may not be precisely accurate, you'll have to
25 accept that.

26 The Task Force on Northern
27 Oil was established as a result of a Cabinet directive,
28 to provide an advisory committee, if you like, that
29 could advise the Cabinet on northern oil development.
30 The chairman of the Task Force was the Deputy Minister of

A.B. Yates, L. Elkin
Cross-Exam by VEale

1 Energy, Mines and Resources, and the members were the
2 Department of Indian and Northern Affairs, Department
3 of Finance, Department of the Environment; I presume, or
4 its predecessor; and I can't tell you the others.
5 The Ministry of Transport I think was also a member,
6 and a number of other departments, but I haven't got
7 the precise membership with me.

8 Q So that if I understand
9 it correctly then, the Task Force would make a
10 recommendation which would then go directly to the
11 Cabinet, is that correct?

12 A It would presumably have
13 gone through the Minister of Energy, Mines and Resources,
14 to Cabinet. That's the normal practice.

15 Q Well, Mr. Yates, I have
16 some minutes relating to meetings held by the
17 Environmental Social Committee, relating to deliberations
18 that took place with respect to alternate routes for
19 northern pipelines; and the first meeting I wish to
20 refer to took place on February 15 of 1972, and I guess
21 that would be when you were a director of the Northern
22 Economic Development Branch. Mr. Hunt, Mr. A. D. Hunt,
23 was the chairman at that particular meeting.

24 THE COMMISSIONER: This is
25 the Environmental Social Program.

26 MR. VEALE: It's the
27 Environmental Social Committee, Mr. Commissioner. I
28 gather the Environmental Social Program is a program
29 within the Department of Indian and Northern Affairs
30 itself.

A.B. Yates, L. Elkin
CROSS-Exam by Veale

1 WITNESS YATES: No, that's
2 not correct. The Environmental Social Committe, was
3 as you mentioned earlier, a committee of the Task
4 Force on Northern Oil, to look at the environmental
5 social aspects, and the program was simply the program
6 of that committee, inter-departmental program.

7 Q So, it's one and the same
8 thing, effectively.

9 A Yes, it had a number of
10 government departments associated with it though, as opposed
11 to being a single departmental operation; and consequently
12 its functioning was outside sort of my immediate area
13 of responsibility; it was an inter-departmental group
14 that operated that program, run by Mr. Alex Reeve.

15 Q I see, well with that
16 qualification, then I'll refer you to some contents of
17 those meetings.

18 A May I ask what document
19 you're speaking from, and whether it is available to
20 the Inquiry?

21 Q Well, it's available to
22 the Inquiry to the extent that I have a copy here --

23 MR. GOUDGE: Perhaps my friend
24 could as well tell us where he's going sir, I'm a little
25 dubious; I would hesitate frankly to see questions
26 directed into an extensive analysis of things that
27 have gone on in the past. I don't know where that
28 gets us.

29 MR. VEALE: Mr. Commissioner,
30 my questions are going to relate to decisions on routings

1 of the pipeline at an early date in 1972. There appears
2 to be certain decisions that were made by the Task Force,
3 or at least the Environmental Social Committee, relating
4 to routing; and I'm hopeful that Mr. Yates will have
5 some information on what decisions went into the
6 particular outcome that took place in those meetings.

7 MR. GOUDGE: Mr. Commissioner,
8 let me say this sir. I've found from the beginning in
9 terms of this whole issue of how the route decision
10 was taken, some grave difficulty in seeing how that is
11 relevant; and my own view of that is, sir, that we have
12 routes proposed by two applicants, and your job sir is
13 to analyze the impact of the routes as proposed. What
14 inputs there were into the choosing of the routes, or
15 into influencing the routes three or four years ago,
16 is as far as I'm concerned sir, not relevant
17 to the task you have to perform.

18 THE COMMISSIONER: I'm concerned
19 Mr. Veale about where this is getting us. If there is
20 something of substance that bears on the whole question
21 of the impact of the two routes these people have
22 proposed, and Arctic Gas has a variety of routes; and
23 bears on the alternate routes that we considered at
24 Whitehorse, that is the impact those routes would have
25 if a pipeline were built now.

26 I'm really not interested in
27 what a lot of people in the government were thrashing
28 around with a few years ago. They were probably talking
29 about an oil pipeline at that time, that's what they
30 wanted to build then. What I'd certainly be prepared

A.B. Yates, L. Elkin
Cross-Exam by Veale

1 to do, because I don't want to shut anything out that
2 might turn out to be helpful, is adjourn for a few
3 minutes, and you might show that to Mr. Goudge, to
4 other counsel and to Mr. Yates, and then Mr. Goudge can
5 let me know if he has any objection to it; and we can
6 talk about it intelligently; but you've got a document
7 before you now that no one else, except presumably
8 Mr. Yates, has seen, and he doesn't seem to be clear
9 about the particular meeting. So I'm prepared to do
10 that, but the Inquiry isn't here as a vehicle to thrash
11 old chafe. People are writing books about what this
12 Task Force was doing at the time, and they're entitled
13 to write books about it, and no doubt the participants
14 in their memoirs, will tell us what went on .

15 But, those are matters of
16 historical judgement, and this Inquiry has enough to do
17 without getting into that kind of thing. At any rate,
18 I'm indicating the kind of subject that doesn't interest
19 me. We'll adjourn a few minutes and you might look at
20 this.

21 (PROCEEDINGS ADJOURNED AT 5:00 P.M.)

22 (PROCEEDINGS RESUMED AT 5:05 P.M. PURSUANT TO
23 ADJOURNMENT)

24 MR. GOUDGE: During the
25 adjournment , Mr. Veale and I have conferred that he
26 has certain documents about which he would have liked
27 to asked Mr. Yates, but on conferring with Mr. Yates,
28 Mr. Yates is just not unfortunately able to answer the
29 questions that Mr. Veale would like to pose; but I think
30

A.B. Yates, L. Elkin
CROSS-Exam by Veale

1 that Mr. Veale would none the less would like to table
2 the documents, I'm not quite sure what they are, that
3 he would have based his questions on.

4 THE COMMISSIONER: All right,
5 yes, Mr. Veale?

6 MR. VEALE: Mr. Commissioner,
7 the documents that I will table as exhibits to the
8 Inquiry, are the minutes of the Environmental Social
9 Committee, the Task Force on Northern Oil Development.
10 Perhaps for historical interest only. The first set
11 of minutes is a meeting of February 15, 1972, in Ottawa
12 in which a number of members of the Department of Indian
13 Affairs and Northern Development, Department of the
14 Environment, and Department of Energy, Mines and Resources
15 were present.

16 Now, I table them because in
17 that particular meeting, the alternate routes were
18 discussed and decisions for action were taken, and I'm
19 paraphrasing the word "decisions" for "action". The
20 studies were to be done of the Tinteen Trans-Alaska
21 Highway, and the Dempster Highway Spurline. And, that
22 decision was in February 15, 1972.

23 The second --

24 MR. MARSHALL: Excuse me sir,
25 if I may. If my learned friend wishes to table the
26 document, it seems that's one thing; if he wishes to
27 give evidence in a summary way as to what the document
28 contains, that's an entirely different matter. It seems
29 to me if he wants to call evidence on this subject, he
30 can put it to a witness who knows something about it,

A.B. Yates, L. Elkin
CROSS-Exam by VEale

1 and ask that witness and they can give some evidence;
2 but we shouldn't really be getting the evidence by way
3 of summary from Mr. Veale.

4 MR. GOUDGE: I take it sir,
5 to be fair to Mr. Veale, he isn't purporting to give
6 evidence, he's simply capsulizing what is in the
7 documents.

8 MR. VEALE: And also to indicate,
9 I would like to have Mr. Yates give his answer as to
10 whether he has any knowledge of that particular area,
11 as well, Mr. Commissioner.

12 THE COMMISSIONER: You'd said
13 something about the Dempster Highway, it completely
14 bemused me. I thought we were talking about pipelines.

15 MR. VEALE: Dempster Highway
16 Spurline, referring to --

17 THE COMMISSIONER: Dempster
18 Highway Spurline?

19 MR. VEALE: Well, that's the
20 line that comes from Inuvik down to the Fort Yukon
21 corridor.

22 THE COMMISSIONER: Oh, you're
23 talking about the Fairbanks Route then.

24 MR. VEALE: That's correct.

25 THE COMMISSIONER: Well, you
26 didn't say that.

27 MR. VEALE: I'm sorry. That's
28 terminolgy that Arctic Gas has placed on the Tinteen
29 Trench and the Alaska Highway, and the Dempster Highway
30 Spurline.

A.B. Yates, L. Elkir
Cross-Exam by Veale

1 The second document is the
2 minutes of May 1972, in which the same committee simply
3 took another decision for action saying that studies
4 on possible southern Yukon routes are not to be
5 encouraged at this time. Now, I just put it to Mr.
6 Yates, it appears that either this committee or Cabinet
7 took a decision in relating to the southern routes.
8 Do you have any knowledge about the reason for such
9 a decision, not to proceed with those particular studies
10 that were outlined in the first document?

11 WITNESS YATES: I'm sorry, I
12 was not a member. You showed me the documents during
13 the recess; I was not a member of those committees,
14 neither did I attend either of the two meetings referred
15 to, and therefore I have no comment to make on the
16 text of the documents, or the conclusions.

17 Q You take that as, those
18 comments relate also to your position as director of
19 Northern policy now, and you're not aware of the reasons
20 for that decision being taken, I gather.

21 A Well, with the limited
22 knowledge you provided me with, I can't even relate to
23 the subjects that may have been discussed at that time.

24 Q It was clearly not a
25 departmental decision then.

26 THE COMMISSIONER: That's
27 something in the minute of a committee, and a decision
28 for action taken by that committee, I don't know what
29 standing it had at the time, but I'm in no position to
30 see what impact it should have on our deliberations here

A.B. Yates, L. Elkin
Cross-Exam by Veale
Re-Dir. Goudge
Cross-Exam by Marshall

1 today.

2 MR. GOUDGE: Mr. Yates has
3 clearly indicated sir that he knows -- he doesn't know
4 the reason behind it.

5 MR. VEALE: I'm not pursuing
6 that, Mr. Commissioner.

7 MR. GOUDGE: I wonder if Mr.
8 Veale might indicate, for the record, where these
9 documents come from?

10 MR. VEALE: I wish I knew
11 the source.

12 THE COMMISSIONER: Well,
13 alright. Do you have any re-examination?
14 RE-DIRECT EXAMINATION BY MR. GOUDGE:

15 MR. GOUDGE: One short question
16 Mr. Yates. You've described the regional planning
17 process that is presently getting underway, and I
18 wonder whether you envisage that process as being able
19 when it gets under way, to serve any purpose by way
20 of monitoring social change, and moving to correct
21 social programs, should they prove to result in adverse
22 social change?

23 WITNESS YATES: Yes, I think
24 the Regional Planning Committee would be an effective
25 sounding board in that respect.

26 MR GOUDGE: Yes, sir, that's
27 the only question I have in reply.

28 CROSS EXAMINATION BY MR. MARSHALL:
29 MR. MARSHALL: Mr. Commissioner,
30 the question has occurred to me, if I might be allowed
to ask it of the panel. Gentlemen, I looked at the
chart that's attached to your evidence, entitled

1 "Mackenzie Delta Regional Planning Committee Structure",
2 and you've discussed in your evidence and cross-examination
3 the membership of the committee, with specific reference
4 to special interest groups.

5 I was wondering gentlemen if
6 industry has been included at all, in the work of the
7 committee. I don't see it listed under special interest
8 groups, and I wonder whether or not it's involved.

9 WITNESS ELKIN: Yes, of course
10 in industry it's highly involved. We had some meetings
11 with a member of the industry involved to date, and as
12 we proceed with our work, we will be establishing a very
13 close contact, and I understand as well that the
14 industry actually has set up a regional planning
15 body itself to deal with us in this area.

16 Q So you intend to have
17 liaison between the industry group and your own
18 committee, but you don't intend, I take it, to have
19 industry representation, as one of the special interest
20 groups, on your committee.

21 A That's correct, yes.

22 MR. MARSHALL:
23 Thank you gentlemen,
24 those are all my questions.

25 MR. GOUDGE: I think that
26 completes the examination and cross-examination of
27 this panel.

28 (WITNESSES ASIDE)

29 THE COMMISSIONER: Well, thank
30 you very much, Mr. Yates, and Mr. Elkin, for your
presentation of the Regional Planning Committee, and
delineation of its work, and its relationship to the

1 implementation of the terms and the conditions that
2 may emanate from the Inquiry. We appreciate your
3 coming, and I'm somewhat unhappy that your evidence
4 was punctuated by these arguments, but that happens
5 from time to time. If you had been discussing whales,
6 or Caribou
7 it would have been smooth sailing, but, I think your
8 subject's a little more controversial.

9 So, I think we can release you
10 then to get the plane, and the Inquiry will adjourn
11 until 8:00 tonight, and we'll hold a community hearing
12 here in this hall, and you're all invited to attend;
13 and since we're sitting tonight, we won't start until
14 ten in the morning.

15 MR. BAYLY: Mr. Commissioner,
16 in the morning I propose to lead the evidence in chief
17 of Messers. Shearer, Lewis, and Milne, together, and
18 that's mainly for the convenience of Mr. Milne, who is
19 trying to make a Saturday meeting in Yellowknife, and
20 if that --

21 THE COMMISSIONER: What plane
22 does he have to get then, tomorrow night?

23 MR. BAYLY: I think tomorrow
24 night, although I'm not certain of that, maybe Saturday
25 morning. But in any event, if we don't finish him,
26 we'll have to continue at another time, or after the
27 weekend.

28 MR. MARSHALL: What about Dr.
29 Herlinveau, is he going to be giving evidence?

30 MR. BAYLY: No, he is not. He
was originally to be giving evidence, but he isn't.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

THE COMMISSIONER: Dr. who?

MR. BAYLY: Dr. Herlinveau.

THE COMMISSIONER: Well, if
he's not going to be, then that's fine.

All right, we stand adjourned.

(PROCEEDINGS ADJOURNED TO FEBRUARY 15, 1976)

347
M835
vol.123

Berger Hearings

AUTHOR

12 Feb., '76.

TITLE

Mackenzie Valley Pipeline
Inquiry

DATE DUE

347
M835
vol.123

3 1761 11468057 2

